

OVERSIGHT OF DOE'S STRATEGY FOR THE MAN-
AGEMENT AND DISPOSAL OF USED NUCLEAR
FUEL AND HIGH-LEVEL RADIOACTIVE WASTE

HEARING
BEFORE THE
SUBCOMMITTEE ON ENVIRONMENT AND THE
ECONOMY
OF THE
COMMITTEE ON ENERGY AND
COMMERCE
HOUSE OF REPRESENTATIVES
ONE HUNDRED THIRTEENTH CONGRESS
FIRST SESSION

JULY 31, 2013

Serial No. 113-77



Printed for the use of the Committee on Energy and Commerce
energycommerce.house.gov

U.S. GOVERNMENT PRINTING OFFICE

86-675 PDF

WASHINGTON : 2014

For sale by the Superintendent of Documents, U.S. Government Printing Office
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OVERSIGHT OF DOE'S STRATEGY FOR THE MANAGEMENT AND DISPOSAL OF USED NU- CLEAR FUEL AND HIGH-LEVEL RADIO- ACTIVE WASTE

WEDNESDAY, JULY 31, 2013

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENVIRONMENT AND THE ECONOMY,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The subcommittee met, pursuant to call, at 2:04 p.m., in room 2123 of the Rayburn House Office Building, Hon. John Shimkus (chairman of the subcommittee) presiding.

Members present: Representatives Shimkus, Hall, Whitfield, Murphy, Latta, Harper, McKinley, Bilirakis, Johnson, Barton, Upton (ex officio), Tonko, Green, Capps, McNerney, Dingell, Barrow, Matsui, and Waxman (ex officio).

Staff present: Nick Abraham, Legislative Clerk; Gary Andres, Staff Director; Charlotte Baker, Press Secretary; David Bell, Staff Assistant; Sean Bonyun, Communications Director; Allison Busbee, Policy Coordinator, Energy and Power; Annie Caputo, Professional Staff Member; David McCarthy, Chief Counsel, Environment and the Economy; Brandon Mooney, Professional Staff Member; Chris Sarley, Policy Coordinator, Environment and the Economy; Peter Spencer, Professional Staff Member, Oversight; Tom Wilbur, Digital Media Advisor; Jeff Baran, Democratic Senior Counsel; Alison Cassady, Democratic Senior Professional Staff Member; and Caitlin Haberman, Democratic Policy Analyst.

Mr. SHIMKUS. I would like to call this hearing to order. I want to thank the Secretary for coming. I would like to recognize myself for the 5-minute opening statement.

OPENING STATEMENT OF HON. JOHN SHIMKUS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS

Today, we review the "Department of Energy's Strategy for the Management and Disposal of Used Nuclear Fuel and High-level Radioactive Waste." We are pleased to have Secretary Moniz with us, looking forward to hearing his testimony.

In 2008, after decades of research, DOE filed an 8,700-page license application at the Nuclear Regulatory Commission for permission to construct a repository at Yucca Mountain. In 2009, the administration unilaterally decided to cancel the Yucca Mountain program and sought to withdraw the license application. The NRC, which is mandated under the Nuclear Waste Policy Act to review

the license, denied DOE's request but not before the then-NRC chairman directed the staff to cease its review, an affair this committee investigated at length. The matter of whether the NRC should resume its review, of course, has now been pending for quite some time before the DC Circuit Court of Appeals.

Three weeks ago, 335 Members of the House, including more than half the Democrats, voted to preserve funding for the NRC's Yucca Mountain license review in the Energy and Water appropriations bill. This vote showed a remarkable bipartisan agreement that the NRC should continue its work as an independent safety regulator and issue a decision on whether or not Yucca Mountain would be a safe repository. After over 30 years and \$15 billion, the American people deserve to know the NRC's independent, objective conclusion.

And, Mr. Secretary, I would also just add that regardless of what the results are, this scientific research at the conclusion would be helpful for any reason, any future repository. The research developed on Yucca Mountain and finalizing the scientific research would be helpful as we move in other directions if we were to do that. So it is very important to finish the scientific report.

In light of all this, DOE's new waste strategy very much represents the administration's effort to start from scratch as if the Nuclear Waste Policy Act doesn't exist or at least as if most of it doesn't exist.

At the end of June, I sent a letter to the agency asking basic questions about the legal authority and funding for the actions DOE is currently undertaking. At this time, I would like to ask that my letter, together with DOE's response and attachment, be included in the hearing record.

Without objection, so ordered.

[The information follows:]

FRED UPTON, MICHIGAN
CHAIRMAN

HENRY A. WAXMAN, CALIFORNIA
RANKING MEMBER

ONE HUNDRED THIRTEENTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON ENERGY AND COMMERCE

2125 RAYBURN HOUSE OFFICE BUILDING
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Minority (202) 725-3641

June 28, 2013

The Honorable Ernest Moniz
Secretary
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Dear Secretary Moniz:

It has come to our attention that the Department of Energy's Office of Nuclear Energy has initiated certain activities in support of its *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste* dated January 2013 (the Strategy). In part, the Strategy calls for a program that sites, designs and licenses, constructs, and begins operations of a pilot interim storage facility by 2021, a larger interim storage facility in 2025, and a geologic repository in 2048.

In July, the Energy and Commerce Committee's Environment and the Economy Subcommittee will conduct a hearing examining the Department's activities in support of the Strategy. In preparation for this hearing, we ask that the Department provide the following information:

1. A list of programs, solicitations, or activities undertaken in support of the Strategy including:
 - a. A description of the deliverables expected to result from each item and the time estimate for their completion;
 - b. The resources expended to date and projected to be necessary for completion, including whether funds from the Nuclear Waste Fund have been or will be used on each item; and
 - c. A description of the legal authority under which each item is being pursued.
2. A description of DOE's efforts to develop a consent-based siting process, including any preliminary design of such a process.

Letter to The Hon. Ernest Moniz
Page 2

To assist the Committee in its continuing oversight, please respond no later than July 12, 2013. Should you have any questions, please contact Annie Caputo of the Committee staff at (202) 225-2927.

Sincerely,

A handwritten signature in dark ink, appearing to read 'J. Shimkus', is written over the printed name. The signature is fluid and cursive, with a large initial 'J' and a long, sweeping underline.

John M. Shimkus



Department of Energy

Washington, DC 20585

July 22, 2013

The Honorable John M. Shimkus
Chairman, Environment and the Economy Subcommittee
Energy and Commerce Committee
U.S. House of Representatives
Washington, DC 20515

Dear Congressman Shimkus:

Thank you for your letter of June 28, 2013 requesting information related to the management and disposal of used nuclear fuel and high-level radioactive waste. Secretary Moniz has asked me to respond to your letter. The Secretary and I take seriously the Federal government's obligation to accept, manage, and ultimately dispose of used nuclear fuel and high-level radioactive waste. The Administration's *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste* reiterates this commitment and outlines a framework for moving toward a sustainable program to fulfill our obligations, providing a basis for discussions among the Administration and Congress and identifying near-term actions to be implemented by the Department of Energy pending enactment of new legislation.

Since the closure of the Yucca Mountain Project in 2010, the Department of Energy has continued activities related to the management and disposal of used nuclear fuel and high-level radioactive waste as part of its Fuel Cycle Research and Development program. Initial activities were outlined in DOE's *Nuclear Energy Research and Development Roadmap*, sent to the Congress in 2010, and included research into the performance of high burn-up used fuel in storage, among other activities. The roadmap noted the establishment of the Blue Ribbon Commission on America's Nuclear Future and acknowledged that all research and development activities and plans outlined would be revisited and revised as needed to reflect the Commission's findings and associated Administration decisions.

In December 2011, the President signed the Consolidated Appropriations Act, 2012, which provided \$60 million in funding for used fuel management and disposal activities. Specifically, the Joint Explanatory Statement accompanying the bill provided that DOE should build upon its current knowledge base to fully understand all repository media and storage options and their comparative advantages and expand its capabilities for assessing issues related to storage of spent fuel.

In January 2012, the Blue Ribbon Commission on America's Nuclear Future (BRC) issued its final report. In Chapter 13 of that report, the Commission recommended a range of near-term activities to be undertaken prior to the passage of new legislation,



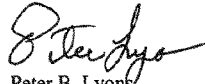
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including beginning to lay the groundwork for implementing consolidated storage, completing the development of procedures and regulations for providing technical assistance and funds under section 180(c) of the Nuclear Waste Policy Act, continuing non-site specific repository activities, and building a data base of the experience gained in efforts to site nuclear waste facilities in the United States and abroad. Many of these near-term activities identified by the BRC were encompassed in activities already being undertaken by the Department. When it was issued in January 2013, the Administration's *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste* recognized the ongoing research and development, analytical and planning activities already underway and endorsed them as laying the groundwork for implementation of the Strategy.

Enclosed are three tables that outline the programs, solicitations, or activities undertaken in support of the Strategy, describe the deliverables expected to result from each item and the time estimate for their completion, the resources expended to date and projected to be necessary for completion, including whether funds from Nuclear Waste Fund have been or will be used on each item, and the legal authority under which each item is being pursued. DOE's efforts to develop a consent-based siting process are described in this table.

Should you have any questions, please contact me or Christopher Davis of the Office of Congressional and Intergovernmental Affairs at 202-586-5450.

Sincerely,



Peter B. Lyons
Assistant Secretary
For Nuclear Energy

Enclosure

Enclosure

Table 1: Summary of Used Nuclear Fuel Disposition Research and Development Subprogram¹

Activity	\$ (FY11)	\$ (FY12)	\$ (FY13)	\$ Planned FY13 ²	\$ Planned (FY14)	Legal Authority
Used Fuel Research and Development Activities (Table 2 below)	\$27,255,983	\$37,873,898	\$21,416,061	\$17,485,672	\$30,000,000	See legal authorities listed for each activity in Table 1 below.
Nuclear Fuels Storage and Transportation Activities (Table 3 below)	\$0	2,370,584	\$8,508,012	\$22,034,605	\$30,000,000	See legal authorities listed for each activity in Table 2 below.

¹ The subprogram consists of two groups of activities: Used Fuel Research and Development Activities (Table 2 below) and Nuclear Fuels Storage and Transportation Activities (Table 3 below).

Used Fuel Research and Development Activities are generic research and development activities being carried out under the Atomic Energy Act of 1954 and are not radioactive waste disposal activities under titles I and II of the Nuclear Waste Policy Act of 1982 (NWPA). Therefore, no funds from the Nuclear Waste Fund have been or will be provided by the Department for these activities. See NWPA, sec. 302(d)(2). The Administration's FY 2014 Budget requests \$30 million of general revenue funds for Used Fuel Research and Development Activities (see "Used nuclear fuel disposition research and development" on page NE-45 of DOE's FY 2014 Congressional Budget Request).

Nuclear Fuels Storage and Transportation Activities, which began in FY 2012, are radioactive waste disposal activities under titles I and II of the NWPA. Section 302(d) provides for the use of the Nuclear Waste Fund with respect to these activities. However, in the Consolidated Appropriations Act, 2012, Congress appropriated the use of general revenue funds for these activities. In FY 2013, these activities continued on the basis of funding appropriated by several Continuing Resolutions. The Administration's FY 2014 Budget requests \$30 million for Nuclear Fuels Storage and Transportation Activities (see "Nuclear high-level waste management and disposal system activities" on pages NE-45 and NE-46 of DOE's FY 2014 Congressional Budget Request). Of this amount, the portion allocated for commercial activities (\$24 million) is requested from the Nuclear Waste Fund and the remaining \$6 million is allocated for defense activities.

² These amounts reflect carry over general revenue funds from previous years

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Table 2: Used Fuel Research and Development Activities

	Activity, Deliverable, and Completion Date	\$ (FY11)	\$ (FY12)	\$ (FY13)	\$ Planned FY13 ³	\$ Planned (FY14) ⁴	Legal Authority
Cross cutting Activities for all the UFD Campaign	Total for Cross cutting Activities for all the UFD Campaign	\$2,416,145	\$3,228,942	\$893,037	\$2,394,585	See footnote 3	
	Reporting, budgeting, planning	\$1,845,164	\$2,648,240	\$724,024	\$2,224,528	See footnote 3	- Atomic Energy Act of 1954 ("AEA") §§ 3, 31, 53, 55, 91, 161 - Energy Reorganization Act of 1974 ("ERA") § 104 - Department of Energy Organization Act ("DOEOA"): 42 U.S.C. §§ 7133, 7151
	International • Report on the Status of UFD Campaign International Activities in Disposal Research (1/31/2014)	\$570,981	\$580,702	\$169,013	\$170,057	See footnote 3	- AEA §§ 3, 31, 91, 161 - ERA § 104 - DOEOA: 42 U.S.C. §§ 7133, 7151

³ See footnote 2 above.

⁴ As explained in footnote 1 above, the Administration's FY 2014 Budget requests \$30 million for used fuel research and development activities. See "Used nuclear fuel disposition research and development" on page NE-45 of DOE's FY 2014 Congressional Budget Request. The FY 2014 Budget contains no further breakdown of how these funds will be allocated.

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	Activity, Deliverable, and Completion Date	\$ (FY11)	\$ (FY12)	\$ (FY13)	\$ Planned FY13 ³	\$ Planned (FY14) ⁴	Legal Authority
Repository and Disposal Research	Total for Repository and Disposal Research	\$15,946,534	\$21,713,234	\$12,508,403	\$9,365,545	See footnote 3	
	Thermal Load Management & Design Concepts	\$2,851,207	\$1,388,840	\$597,266	\$390,056	See footnote 3	
	• Reference Disposal Concepts: Description and Thermal Analysis (11/15/2012)						- AEA §§ 3, 31, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151
	Generic Engineered Barrier System Evaluations	\$6,801,314	\$4,725,070	\$2,428,258	\$1,835,145	See footnote 3	
	• EBS Model Development and Eval Report (9/27/2013)						- AEA §§ 3, 31, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151
	• Used Fuel Degradation: Experimental and Modeling Report (10/17/2013)						- AEA §§ 3, 31, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151
	• International Collaborations on Engineered						- AEA §§ 3, 31, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151

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	Activity, Deliverable, and Completion Date	\$ (FY11)	\$ (FY12)	\$ (FY13)	\$ Planned FY13 ³	\$ Planned (FY14) ⁴	Legal Authority
Repository and Disposal Research	Barrier Systems: Experimental and Modeling Investigation s Report (12/1/2013)						
	Generic Natural System Evaluations	\$1,269,854	\$4,806,911	\$3,340,519	\$2,642,504	See footnote 3	
	<ul style="list-style-type: none"> Report on a GIS Database for Alternative Host Rocks and Sensitivity to Potential Siting Guidelines (12/6/2013) 						<ul style="list-style-type: none"> AEA §§ 3, 31, 91, 161 ERA § 104 DOEOA: 42 U.S.C. §§ 7133, 7151
	<ul style="list-style-type: none"> Report on modeling fluid flows in natural system, model validation and demonstratio 						<ul style="list-style-type: none"> AEA §§ 3, 31, 91, 161 ERA § 104 DOEOA: 42 U.S.C. §§ 7133, 7151

Enclosure

	Activity, Deliverable, and Completion Date	\$ (FY11)	\$ (FY12)	\$ (FY13)	\$ Planned FY13 ³	\$ Planned (FY14) ⁴	Legal Authority
Repository and Disposal Research	n (12/15/2013)						
	<ul style="list-style-type: none"> Report on Fluid flow model development for representative geologic media 						<ul style="list-style-type: none"> - AEA §§ 3, 31, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151
	<ul style="list-style-type: none"> Report on THMC modeling of the near field evolution of a generic clay repository: Model validation and demonstration 						<ul style="list-style-type: none"> - AEA §§ 3, 31, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151
	<ul style="list-style-type: none"> Report on modeling radionuclide interaction and transport 						<ul style="list-style-type: none"> - AEA §§ 3, 31, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151

Enclosure							
	Activity, Deliverable, and Completion Date	\$ (FY11)	\$ (FY12)	\$ (FY13)	\$ Planned FY13 ³	\$ Planned (FY14) ⁴	Legal Authority
Repository and Disposal Research	in representative geologic media (9/15/2013)						
	<ul style="list-style-type: none">Natural System Evaluations International Collaborations Progress Report (12/9/2013)						<ul style="list-style-type: none">AEA §§ 3, 31, 91, 161ERA § 104DOEOA: 42 U.S.C. §§ 7133, 7151
	Generic Disposal System Level Modeling	\$3,170,337	\$2,894,146	\$1,729,923	\$1,296,454	See footnote 3	
	<ul style="list-style-type: none">Generic Safety Case Report (1/31/2013)						<ul style="list-style-type: none">AEA §§ 3, 31, 91, 161ERA § 104DOEOA: 42 U.S.C. §§ 7133, 7151
	<ul style="list-style-type: none">Generic Disposal System Modeling Report (11/16/2013)						<ul style="list-style-type: none">AEA §§ 3, 31, 91, 161ERA § 104DOEOA: 42 U.S.C. §§ 7133, 7151
	Inventory	\$506,525	\$2,346,904	\$333,466	\$246,463	See footnote 3	<ul style="list-style-type: none">AEA §§ 3, 31, 91, 161ERA § 104DOEOA: 42 U.S.C. §§ 7133, 7151

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Activity, Deliverable, and Completion Date	\$ (FY11)	\$ (FY12)	\$ (FY13)	\$ Planned FY13 ³	\$ Planned (FY14) ⁴	Legal Authority
Low Level Radioactive Waste Disposition from Repackaging DPCs	\$451,015	\$251,149	\$76,950	\$321,801	See footnote 3	
• LLW Radionuclide Inventory Data (9/30/2013)						<ul style="list-style-type: none"> - AEA §§ 3, 31, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151
DPC Direct Disposal Investigations	\$0	\$694,400	\$756,099	\$489,249	See footnote 3	
• Preliminary Report on DPC Disposal Alternatives (8/30/2013)						<ul style="list-style-type: none"> - AEA §§ 3, 31, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151
Deep Borehole Disposal	\$0	\$410,877	\$418,920	\$502,702	See footnote 3	
• Deep Borehole Disposal Research RD&D Needs and Criteria and Alternatives for Demonstration Site						<ul style="list-style-type: none"> - AEA §§ 3, 31, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151

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Activity, Deliverable, and Completion Date	\$ (FY11)	\$ (FY12)	\$ (FY13)	\$ Planned FY13 ³	\$ Planned (FY14) ⁴	Legal Authority
Selection (10/25/2013)						
Salt R&D	\$896,281	\$4,194,938	\$2,827,003	\$1,641,172	See footnote 3	
<ul style="list-style-type: none"> Couple Model for Heat and Water Transport in a HLW Repository (9/30/2013) 						<ul style="list-style-type: none"> - AEA §§ 3, 31, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151
<ul style="list-style-type: none"> Brine Migration Experimental Studies for Salt Repositories Report – FY13 (9/25/2013) 						<ul style="list-style-type: none"> - AEA §§ 3, 31, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151
<ul style="list-style-type: none"> RD&D for the Advancement of Science and Engineering Supporting 						<ul style="list-style-type: none"> - AEA §§ 3, 31, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151

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Activity, Deliverable, and Completion Date	\$ (FY11)	\$ (FY12)	\$ (FY13)	\$ Planned FY13 ³	\$ Planned (FY14) ⁴	Legal Authority
Geologic Disposal in Bedded Salt – March 2013 Workshop Outcomes (5/31/2013)						
<ul style="list-style-type: none"> Proceedings: 3rd US/German Workshop on Salt Repository Research, Design, and Operation (3/29/2013) 						<ul style="list-style-type: none"> - AEA §§ 3, 31, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151
<ul style="list-style-type: none"> Establishing the Technical Basis for Disposal of Heat-generating Waste in Salt (7/29/2013) 						<ul style="list-style-type: none"> - AEA §§ 3, 31, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151
<ul style="list-style-type: none"> Coupled Thermal-Hydrological-Mechanical Processes in 						<ul style="list-style-type: none"> - AEA §§ 3, 31, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151

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	Activity, Deliverable, and Completion Date	\$ (FY11)	\$ (FY12)	\$ (FY13)	\$ Planned FY13 ³	\$ Planned (FY14) ⁴	Legal Authority
	Salt (11/15/2013)						
	Total for Storage and Transportation Research	\$8,893,304	\$12,931,722	\$8,014,621	\$5,725,542	See footnote 3	
	Field Demonstration	\$3,726,807	\$3,009,574	\$1,767,787	\$1,545,674	See footnote 3	
	• Long Term Used Nuclear Fuel Storage Viability Report (11/15/2012)						- AEA §§ 3, 31, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151
Storage and Transporta tion Research	Storage and Transportation Experiments	\$2,504,926	\$3,101,878	\$3,517,609	\$2,612,797	See footnote 3	
	• Data report on ring compression and DBTT tests for PWR cladding (9/30/2013)						- AEA §§ 3, 31, 53, 55, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151
	• Data report on hydrogen doping and irradiation in HFIR (9/30/2013)						- AEA §§ 3, 31, 53, 55, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151
	• Data report on hydrogen doping/distribution tests (4/30/2013)						- AEA §§ 3, 31, 53, 55, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151

Enclosure

	Activity, Deliverable, and Completion Date	\$ (FY11)	\$ (FY12)	\$ (FY13)	\$ Planned FY13 ³	\$ Planned (FY14) ⁴	Legal Authority
Storage and Transportation Research	<ul style="list-style-type: none"> Data report on corrosion testing of stainless steel SNF storage canisters (9/30/2013) 						<ul style="list-style-type: none"> AEA §§ 3, 31, 53, 55, 91, 161 ERA § 104 DOEOA: 42 U.S.C. §§ 7133, 7151
	Storage and Transportation Engineering Analysis	\$0	\$3,922,498	\$1,399,448	\$923,566	See footnote 3	
	<ul style="list-style-type: none"> Report on methodology to estimate used fuel cladding hydride reorientation during thermal excursions simulated during drying (8/30/2013) 						<ul style="list-style-type: none"> AEA §§ 3, 31, 53, 55, 91, 161 ERA § 104 DOEOA: 42 U.S.C. §§ 7133, 7151
	Transportation	\$1,611,502	\$2,634,476	\$1,189,691	\$446,088	See footnote 3	
	<ul style="list-style-type: none"> Conduct assembly shaker table test. Prepare test report. (6/30/2013) 						<ul style="list-style-type: none"> AEA §§ 3, 31, 53, 55, 91, 161 ERA § 104 DOEOA: 42 U.S.C. §§ 7133, 7151
	Security	\$1,050,068	\$263,295	\$140,087	\$197,417	See footnote 3	

Enclosure

Activity, Deliverable, and Completion Date	\$ (FY11)	\$ (FY12)	\$ (FY13)	\$ Planned FY13 ^a	\$ Planned (FY14) ^b	Legal Authority
<ul style="list-style-type: none"> Review of Security Strategies for Used Fuel Storage and Transportation for a Consolidated Storage Facility (06/21/2013) 						<ul style="list-style-type: none"> AEA §§ 3, 31, 53, 55, 91, 161 ERA § 104 DOEOA: 42 U.S.C. §§ 7133, 7151
Grand Total	\$27,255,983	\$37,873,898	\$21,416,061	\$17,485,672	\$30,000,000	

Table 3: Nuclear Fuels Storage and Transportation Activities

	Activity, Deliverable, and Completion Date	\$ FY12	\$ (FY13)	\$ Planned (FY13) ⁵	\$ Planned (FY 14) ⁶	Legal Authority
Storage	Evaluate Alternative Generic Design Concepts for Consolidated Interim Storage.	408,007	1,940,262	3,625,227	See footnote 4	
	• AREVA Design Concepts Report (2/28/13)					
	• EnergySolutions Design Concepts Report (2/28/13)					
	• Shaw Design Concepts Report (2/28/13)					
	• AREVA Transfer of UNF Stored in Non-Disposable Canister Report (8/30/13)					
	• Shaw Transfer of UNF Stored in Non-Disposable Canister Report (8/30/13)					
	• A Project Concept for Nuclear Fuels Storage and					
						<ul style="list-style-type: none"> - AEA §§ 3, 31, 91, 161 - ERA § 104 - DOE/EA: 42 U.S.C. §§ 7133, 7151 - NWPA § 142(b)

⁵ See footnote 2 above.

⁶ As explained in footnote 1 above, the Administration's FY 2014 Budget requests \$30 million for nuclear fuels storage and transportation activities. See "Nuclear high-level waste management and disposal system activities" on pages NE-45 and NE-46 of DOE's FY 2014 Congressional Budget Request. The FY 2014 Budget contains no further breakdown of how these funds will be allocated.

	Enclosure					Legal Authority
	Activity, Deliverable, and Completion Date	\$ FY12	\$ FY13	\$ Planned (FY13) ⁵	\$ Planned (FY 14) ⁶	
Transportation	Transportation (6/13/13)					
	Continue the conceptual design for a generic storage facility and supporting transportation system.	0	0	8,000,000 ⁷		- AEA §§ 3, 31, 53, 55, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151 - NWPA §§ 142(b), 180
	Develop Pilot Project Conceptual Plan (includes functions and requirements, inventory baseline)	0	244,319	307,717	See footnote 4	- AEA §§ 3, 31, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151 - NWPA § 142(b)
	Transportation Institutional Activities <ul style="list-style-type: none"> Draft Revised Section 180(c) Policy (9/30/13) Develop Draft National Transportation Plan (9/30/13) Draft Preliminary Routes for Shipments from Shutdown Reactors (9/30/13) Develop routing models for shipment of used nuclear fuel (9/30/13) 	137,504	361,466	1,375,395	See footnote 4	- AEA §§ 3, 31, 53, 55, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151 - NWPA § 180

⁷Unobligated funds for this activity will not be allocated until FY 2014.

Enclosure

	Activity, Deliverable, and Completion Date	\$ FY12	\$ (FY13)	\$ Planned (FY13) ⁵	\$ Planned (FY 14) ⁶	Legal Authority
	Update the National Transportation Plan to address initial shipments from shutdown reactors to a generic consolidated storage facility.					- AEA §§ 3, 31, 53, 55, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151 - NWPA § 180
	Cooperative agreements with State Regional Groups and tribes	29,634	341,879	1,495,366	See footnote 4	- AEA §§ 3, 31, 53, 55, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151 - NWPA § 180
	Evaluate shipment of used fuel from shutdown reactor sites <ul style="list-style-type: none"> • Preliminary Evaluation of Removing UNF from Nine Shutdown sites (10/31/12) • Stranded Site De-inventorying Report (9/30/13) 	213,598	227,446	826,810	See footnote 4	- AEA §§ 3, 31, 53, 55, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151 - NWPA § 180
	Complete an analysis for initial used fuel shipments from shutdown reactor sites.					- AEA §§ 3, 31, 53, 55, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151 - NWPA § 180
	Assess Transportation Hardware needs (casks and	0	6,692	200,000	See footnote 4	- AEA §§ 3, 31, 53, 55, 91, 161 - ERA § 104

	Enclosure					Legal Authority
	Activity, Deliverable, and Completion Date	\$ FY12	\$ FY13	\$ Planned (FY13) ⁵	\$ Planned (FY 14) ⁶	
	rolling stock) <ul style="list-style-type: none"> Preliminary Hardware Alternatives Analysis Report (9/30/13) 					<ul style="list-style-type: none"> DOEOA: 42 U.S.C. §§ 7133, 7151 NWPA § 180
	Review of full scale rail cask severe accident tests <ul style="list-style-type: none"> Review of Full Scale Rail Cask Severe Accident Test Studies Report (7/26/13) 	0	77,568	100,000	See footnote 4	<ul style="list-style-type: none"> AEA §§ 3, 31, 53, 55, 91, 161 ERA § 104 DOEOA: 42 U.S.C. §§ 7133, 7151 NWPA § 180
	Development of Codes to support Transportation Systems <ul style="list-style-type: none"> RADTRAN Model and Calculation of Occupational Dose from a Transportation Accident (8/9/13) TRAGIS Updated Intermodal Feasibility Study and Updated GIS Layers (9/30/13) 	0	400,464	900,000	See footnote 4	<ul style="list-style-type: none"> AEA §§ 3, 31, 53, 55, 91, 161 ERA § 104 DOEOA: 42 U.S.C. §§ 7133, 7151 NWPA § 180
Strategic	Conduct system analyses to inform future decisions for including initial consolidated	877,732	141,513	3,593,989	See footnote 4	<ul style="list-style-type: none"> AEA §§ 3, 31, 53, 55, 91, 161 ERA § 104 DOEOA: 42 U.S.C. §§

Enclosure						
	Activity, Deliverable, and Completion Date	\$ FY12	\$ (FY13)	\$ Planned (FY13) ⁵	\$ Planned (FY 14) ⁶	Legal Authority
	interim storage, use of standardized containers, improving efficiency of transportation <ul style="list-style-type: none">• System Architecture Evaluation (10/31/13)• Backend Fuel Cycle Cost Comparison (12/17/12)					7133, 7151 - NWPA §§ 142(b), 180
	Conduct system architecture and operating evaluations of various used fuel management systems.					- AEA §§ 3, 31, 53, 55, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151 - NWPA §§ 111, 142(b), 180
	Collect, develop, process, and management of information needed for used nuclear fuel management system development <ul style="list-style-type: none">• Transport/Shipping Database Report (8/12/13)• Centralized Used Fuel Resource for Information Exchange Website (8/30/13)	0	354,935	1,107,806	See footnote 4	- AEA §§ 3, 31, 53, 55, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151 - NWPA §§ 111, 142(b), 180

	Activity, Deliverable, and Completion Date	Enclosure				Legal Authority
		\$ FY12	\$ FY13	\$ Planned (FY13) ⁵	\$ Planned (FY 14) ⁵	
	Evaluate feasibility and develop implementation plan for standardized transportation, aging, and disposal canisters <ul style="list-style-type: none"> • AREVA Standardized Canister Feasibility Report (6/30/13) • EnergySolutions Standardized Canister Feasibility Report (6/30/13) • Path-forward for Standardized Canisters Recommendation Report (9/30/13) 	534,154	552,205	2,645,466	See footnote 4	<ul style="list-style-type: none"> - AEA §§ 3, 31, 53, 55, 91, 161 - ERA § 104 - DOE/EA-42 U.S.C. §§ 7133, 7151 - NWPA §§ 111, 142(b), 180
	Continue the evaluation of standardized containers for storage, transportation, and potentially disposal.					<ul style="list-style-type: none"> - AEA §§ 3, 31, 53, 55, 91, 161 - ERA § 104 - DOE/EA-42 U.S.C. §§ 7133, 7151 - NWPA §§ 111, 142(b), 180
	Expand capabilities for assessing issues related to the aging and safety of storing and transporting used nuclear fuel	0	2,407,776	2,728,039	See footnote 4	<ul style="list-style-type: none"> - AEA §§ 3, 31, 53, 55, 91, 161 - ERA § 104 - DOE/EA-42 U.S.C. §§ 7133, 7151 - NWPA §§ 111, 142(b), 180

Enclosure		Activity, Deliverable, and Completion Date	\$ FY12	\$ (FY13)	\$ Planned (FY13) ⁵	\$ Planned (FY 14) ⁶	Legal Authority
Siting		<ul style="list-style-type: none"> Complete synchronization of computational packages (UNF-ST&DARDS) (12/21/12) Complete Database with Documentation (UNF-ST&DARDS) (3/22/13) Demonstration of UNF-ST&DARDS Capabilities (4/26/13) SCALE Enhancements to support used nuclear fuel safety evaluations (9/30/13) 					
		General Activities to support Transportation, Siting, and Storage (Project Management, Technical Support) <ul style="list-style-type: none"> Draft Project Plan (3/31/2013) 	0	895,307	2,502,307	See footnote 4	<ul style="list-style-type: none"> AEA §§ 3, 31, 53, 55, 91, 161 ERA § 104 DOEOA: 42 U.S.C. §§ 7133, 7151 NWPA §§ 111, 142(b), 180
		Develop data based off past siting efforts <ul style="list-style-type: none"> Siting Experience Archive (3/29/13) 	117,730	245,863	382,270	See footnote 4	<ul style="list-style-type: none"> AEA §§ 3, 31, 91, 161 ERA § 104 DOEOA: 42 U.S.C. §§ 7133, 7151 NWPA §§ 111, 142(b)
		Analyze and evaluate public preferences related to	52,225	310,317	752,225	See footnote 4	<ul style="list-style-type: none"> AEA §§ 3, 31, 91, 161 ERA § 104 DOEOA: 42 U.S.C. §§

Enclosure

	Activity, Deliverable, and Completion Date	\$ FY12	\$ (FY13)	\$ Planned (FY13) ⁵	\$ Planned (FY 14) ⁶	Legal Authority
	siting, characterization, and operation of facilities for storage and disposals <ul style="list-style-type: none"> Public Preferences Study related to Siting Facilities (2/1/13) Public Preference Study related to Characterization and operation of Facilities (9/30/13) Summary of Approaches for Consent-Based Siting of Radioactive Waste Management Facilities: Evidence-Based Considerations and Case Studies (3/31/13) 					7133, 7151 - NWPA §§ 111, 142(b)
	Continue developing plans for a consent-based siting process.					- AEA §§ 3, 31, 91, 161 - ERA § 104 - DOE OA: 42 U.S.C. §§ 7133, 7151 - NWPA §§ 111, 142(b)
	Grand Total	2,370,584	8,508,012	22,034,605	30,000,000	

Mr. SHIMKUS. DOE's response cited a few convenient sections of the Nuclear Waste Policy Act as providing the authority for the Department to conduct certain work. But, and I want to underscore this, the agency did not cite Section 302(d) regarding the use of the Nuclear Waste Fund, which states: "No amount may be expended by the Secretary under this subtitle for the construction or expansion of any facility unless such construction or expansion is expressly authorized by this or subsequent legislation. The Secretary hereby is authorized to construct one repository and one test and evaluation facility," which, of course, with the law is Yucca Mountain.

DOE estimates the cost of starting over to be \$5.6 billion for just the first 10 years. At the end of those 10 years, DOE projects to have only a pilot facility operating with a repository not expected to be operational until 2048. Ladies and gentlemen, that is 65 years after Congress first passed the Nuclear Waste Policy Act and after the reactors we have operating today have most likely closed.

DOE's Strategy would require legislation but Secretary Moniz indicated in our hearing last month that the administration does not intend to propose legislation. DOE is in this situation because the White House decided not to follow the law that Congress has already passed. With this Strategy, DOE expects to simply write off \$15 billion in favor of a pilot facility that might or may not get sited after this administration ends. I firmly believe the public deserves to know the truth about Yucca Mountain. We all need to know about all the money that has been spent and the science behind it not just for ourselves but for our children and our grandchildren. We deserve a permanent solution, not just the hope of a temporary fix.

[The prepared statement of Mr. Shimkus follows:]

PREPARED STATEMENT OF HON. JOHN SHIMKUS

Today we review the Department of Energy's Strategy for the Management and Disposal of Used Nuclear Fuel and High-level Radioactive Waste. We are pleased to have Secretary Moniz with us and look forward to hearing his testimony.

In 2008, after decades of research, DOE filed an 8,700-page license application at the Nuclear Regulatory Commission for permission to construct a repository at Yucca Mountain. In 2009, the administration unilaterally decided to cancel the Yucca Mountain program and sought to withdraw the license application. The NRC, which is mandated under the Nuclear Waste Policy Act to review the license, denied DOE's request but not before the then-NRC Chairman directed the staff to cease its review—an affair this committee investigated at length. The matter of whether the NRC should resume its review, of course, has now been pending for quite some time before the DC Circuit Court of Appeals.

Three weeks ago, 335 House members—including more than half our Democrats—voted to preserve funding for the NRC's Yucca Mountain license review in the energy and water appropriations bill. This vote showed a remarkable bi-partisan agreement that the NRC should continue its work as the independent safety regulator and issue a decision on whether or not Yucca Mountain would be a safe repository. After over 30 years and \$15 billion, the American people deserve to know the NRC's independent, objective conclusion.

In light of all this work, DOE's new waste strategy very much represents the administration's effort to start from scratch as if the Nuclear Waste Policy Act doesn't exist or at least as if most of it doesn't exist.

At the end of June, I sent a letter to the agency asking basic questions about the legal authority and funding for the actions DOE is currently undertaking. At this time, I'd like to ask that my letter together with DOE's response and attachment be included in the hearing record. DOE's response cited a few convenient sections

of the Nuclear Waste Policy Act as providing the authority for the Department to conduct certain work.

But the agency did not cite Section 302(d) regarding the use of the Nuclear Waste Fund, which states:

"No amount may be expended by the Secretary under this subtitle for the construction or expansion of any facility unless such construction or expansion is expressly authorized by this or subsequent legislation. The Secretary hereby is authorized to construct one repository and one test and evaluation facility."

Which is, of course, Yucca Mountain.

DOE estimates the cost of starting over to be \$5.6 billion for just the first 10 years. At the end of those 10 years, DOE projects to have only a pilot facility operating with a repository not expected to be operational until 2048—ladies and gentlemen, that's 65 years after Congress first passed the Nuclear Waste Policy Act and after the reactors we have operating today have likely closed.

DOE's Strategy would require legislation but Secretary Moniz indicated in our hearing last month that the administration does not intend to propose legislation. DOE is in this situation because the White House decided NOT to follow the law that Congress has already passed.

With this Strategy, DOE expects to simply write-off \$15 billion in favor of a pilot facility that might, or might not, get sited after this administration ends. I firmly believe the public deserves to know the truth about Yucca Mountain, and our children and grandchildren deserve a permanent solution not just the hope of a temporary fix.

Mr. SHIMKUS. And with this, I would like to yield now to my colleague, Mr. Tonko, the ranking member of the subcommittee, for 5 minutes.

OPENING STATEMENT OF HON. PAUL TONKO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Mr. TONKO. Thank you, Mr. Chair. And welcome, Secretary Moniz. Thank you for appearing before this subcommittee on a very important topic this afternoon.

For decades, nuclear power plants have provided electricity through the fleet of reactors located across our country. Over the same period, we have generated substantial amounts of waste that have yet to be secured in a long-term storage facility. We have debated this issue. We have funded research and development. We have passed laws designating a storage facility and have held numerous oversight hearings over the years. There have been reports by the National Academy of Sciences, the Government Accountability Office, industry and nongovernmental groups, and then most recently, as we all know, the President's Blue Ribbon Commission. But we still have not solved the nuclear waste problem.

We have a long-term storage facility and yet we do not. We do not have interim storage facilities or a policy of establishing them, and yet we do. I don't know what else you would call the storage facilities at each power plant site around the country. They are now de facto interim storage facilities. If nuclear power is going to continue to play a significant role in delivering baseload electrical power, we need a resolution to this situation. It will not be easy and it will be most likely expensive. But the alternative is also expensive and provides less safety, less security than a functioning, ordered process for dealing with spent fuel.

I realize that many people feel this resolution is to complete the process to open Yucca Mountain. Well, the Yucca Mountain facility is not open at this time and it does not appear it will be open in the near future. In the meantime, spent fuel continues to accumulate and penalty fees continue to accrue. It appears to me that it

is worth examining alternatives to current law and the current situation. Partisan bickering will not solve this situation and strictly adhering to past or current positions will not solve this problem either. The administration's strategy, based on the work done by the Blue Ribbon Commission in 2012, also has its challenges and its unknowns.

If we are to pursue a system that includes both interim and long-term storage of waste, how do we proceed? How many interim sites will be needed? How much waste can or should be stored there? And what time period qualifies as interim? Where will they be located? How do we ensure the transportation to these sites is done and done safely? Are there States and localities willing to host repositories, either interim or permanent? What are the costs and can we access the necessary funds in the fund established to deal with this problem?

I do not expect to hear definitive answers to all of these questions here this afternoon. Today's hearing does, however, give us an opportunity to examine all options for moving forward. In any case, it appears congressional action is needed, and I am willing to work with my colleagues to address this issue. I do not see much future for nuclear power if we do not find a way to deal with this issue.

Again, Mr. Secretary, I thank you for being here this afternoon and I thank you, Chairman Shimkus, for holding this very important hearing.

With that, I yield back.

Mr. SHIMKUS. The gentleman yields back his time.

The chair now recognizes the chairman of the full committee, Mr. Upton, for 5 minutes.

OPENING STATEMENT OF HON. FRED UPTON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN

Mr. UPTON. Thank you, Mr. Chairman, for holding this hearing and certainly for your leadership on the issue. And, Secretary Moniz, we certainly appreciate you being here as well this afternoon.

During your tenure as Secretary, you and I will work together on a wide array of issues, and I certainly appreciate the time that we have spent since you have been Secretary and look forward down the road as well. I appreciate that dialogue on a number of issues. But certainly the nuclear waste disposal is a great concern for me and one that I sank my teeth into early on when I came onto this committee and myself and Mr. Towns, with Mr. Dingell's help, we were able to broker a pretty good deal back in the '90s.

You know, the Nuclear Waste Policy Act is the law on the subject, and as Chairman Shimkus stated, that means Yucca Mountain. Shutting down the repository program, the administration did not elaborate on a technical or safety concern, merely that it was "unworkable." This was followed by the former Nuclear Regulatory Commission chairman, who unilaterally ceased the staff's review of the license application one month—one month—before a key safety evaluation report was to be publicly released with the agency's conclusion about the safety of Yucca.

Electricity consumers pay for the disposal of civilian spent nuclear fuel and taxpayers pay for disposal of nuclear waste from the

Atomic Energy Defense program. In Michigan, our consumers alone have paid nearly \$600 million into the fund. Fifteen billion was invested in this repository program and got us within just a month of knowing whether we have a scientifically safe and sound location. And after spending that 15 billion, the public certainly should have the right to know what the NRC concluded. Instead, the strategy unfortunately abandoned that investment, expecting consumers and taxpayers to foot the bill for another 5.6 billion for the first 10 years to start really back at square one.

By the end of this fiscal year, DOE will have spent nearly \$80 million in support of that strategy. And I realize that is the result of an omnibus appropriation for fiscal year 2012 and a continuing resolution for '13 and I strongly support the efforts of the House Appropriations Committee to correct this situation.

The House Energy and Water appropriation bill did clarify that the Nuclear Waste Fund is only to be used for its intended purpose: Yucca Mountain. The bill also eliminated the burden currently shouldered by the taxpayer for the administration's decision to start over.

So questions also have arisen about whether the Nuclear Waste Fund would be adequate under DOE's new approach. GAO doesn't believe it is. Previous cost estimates indicated the fund would be adequate to finish building and operating Yucca, but GAO questions whether the fund would be adequate to cover the costs of pursuing an alternate repository, in addition to two interim storage facilities and multiple transportation campaigns.

The administration touts its strategy as saving taxpayer money by mitigating DOE liability for failure to accept and dispose of spent fuel, and we have asked the GAO to analyze that. Last August, a year ago, GAO said that Yucca could be completed faster than a new effort to build interim storage, thus making Yucca the best option for mitigating taxpayer liability.

I certainly remain committed to ensuring that consumers get the repository that they have paid for and that the costs to the taxpayers are minimized. And right now, it seems as though Yucca does remain the clear answer to both of those problems. And it is the law.

So, Mr. Secretary, I look forward to our continued dialogue in the weeks and months ahead to solve a long-term nuclear waste disposal issue.

I yield back my time.

[The prepared statement of Mr. Upton follows:]

PREPARED STATEMENT OF HON. FRED UPTON

Thank you, Chairman Shimkus, for holding this hearing and for your leadership on this issue. Secretary Moniz, thank you for being here.

During your tenure as Secretary, you and I will work together on a wide array of issues. I also appreciate the opportunity for an ongoing dialogue on the issue of nuclear waste disposal, which is an issue of great concern to me, and one for which I do have concerns with the department's strategy.

First, the Nuclear Waste Policy Act is the law on this subject. As Chairman Shimkus stated, that means Yucca Mountain. In shutting down the repository program, the administration did not elaborate on a technical or safety concern, merely that it was "unworkable." This was followed by the former Nuclear Regulatory Commission chairman unilaterally ceasing the staff's review of the license application

one month—one month before a key safety evaluation report was to be publicly released with the agency's conclusions about the safety of Yucca Mountain.

Electricity consumers pay for the disposal of civilian spent nuclear fuel and taxpayers pay for disposal of nuclear waste from the atomic energy defense program. Michigan consumers alone have paid nearly \$600 million into the fund. \$15 billion was invested in the repository program and got us within one month of knowing whether we have a scientifically safe and sound location. After spending \$15 billion, the public should have a right to know what the NRC concluded. Instead, DOE's strategy unfortunately abandons that investment, expecting consumers and taxpayers to foot the bill for another \$5.6 billion for the first 10 years to start over from square one.

By the end of this fiscal year, DOE will have spent nearly 80 million taxpayer dollars in support of the strategy. I realize this is the result of omnibus appropriations for FY 2012 and a continuing resolution for FY 2013. I strongly support the efforts of the House Appropriations committee to correct this situation. The House Energy and Water Appropriations bill clarifies that the Nuclear Waste Fund is only to be used for its intended purpose: Yucca Mountain. The bill also eliminates the burden currently shouldered by the taxpayer for the administration's decision to start over.

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The administration touts its strategy as saving taxpayer money by mitigating DOE liability for failure to accept and dispose of spent fuel. We've asked GAO to analyze this. Last August GAO said that Yucca Mountain could be completed faster than a new effort to build interim storage, thus making Yucca Mountain the best option for mitigating taxpayer liability.

I remain committed to ensuring that consumers get the repository that they have paid for and that the costs to the taxpayers are minimized. Right now, Yucca Mountain remains the clear answer to both of those problems. And it's the law.

Mr. Secretary, I look forward to our continued dialogue in the weeks and months ahead in the effort to solve our long-term nuclear waste disposal.

Mr. SHIMKUS. The gentleman yields back his time. The chair now recognizes the ranking member of the full committee, Mr. Waxman, for 5 minutes.

OPENING STATEMENT OF HON. HENRY A. WAXMAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. WAXMAN. Mr. Chairman, in 1982 Congress passed the Nuclear Waste Policy Act. The Act sought to establish a fair and science-based process for selecting two repository sites for spent nuclear fuel and high-level radioactive waste. Under this approach, no one State or locality would bear the entire burden of the Nation's nuclear waste. In the years that followed, the Department of Energy began evaluating a number of potential repository sites.

Then, just 5 years later, in 1987, Congress made the decision to designate Yucca Mountain in Nevada as the sole site to be considered for a permanent geologic repository. There was no plan B. This decision was widely viewed as political and provoked strong opposition in Nevada. Ever since Congress decided to short-circuit the site selection process, the State of Nevada and a majority of its citizens have opposed the Yucca Mountain project.

In 2002, President Bush recommended the Yucca Mountain site to Congress. Using the State veto procedures set forth in the Nuclear Waste Policy Act, Nevada then filed an official Notice of Dis-

approval of the site. Congress proceeded to override Nevada's veto by enacting a resolution that was reported by this committee.

Twenty-five years after the 1987 amendments to the Nuclear Waste Policy Act, it is clear that this Washington-knows-best approach has not worked. The Department of Energy has terminated its Yucca Mountain activities.

President Obama wisely sought a new approach. He directed Secretary Chu to charter a Blue Ribbon Commission to perform a comprehensive review of U.S. policies for managing nuclear waste and to recommend a new strategy.

Last year, we heard testimony from the co-chairs of the Blue Ribbon Commission on the recommendations that resulted from their 2-year effort. Since then, the Department of Energy has released a strategy for implementing many of those recommendations.

The Commission recommendations and the DOE's strategy deserve our serious consideration. They raise a number of important policy questions such as whether a new organization should be established to address the nuclear waste problem, how nuclear waste fees should be used, and whether one or more centralized storage facilities should be developed in addition to one or more geologic repositories.

These are policy questions that require a legislative response. Answering these questions requires an open mind and a willingness to move past a narrow obsession with Yucca Mountain. The Senate appears to be moving forward. Four Senators recently introduced bipartisan nuclear waste legislation. The bill may not have the final answer to every question, but it represents a genuine effort to get past ideology and begin grappling with these tough issues. We should seek a similar constructive approach in the House. If we pound the same old drumbeat on Yucca Mountain, all we will get is more gridlock, which serves no one well.

Secretary Moniz, you do us a great service by appearing today before this subcommittee. It is unusual to have a Department Secretary testify before this subcommittee. We have had Cabinet officials who testify before the full committee. It is a testament to your commitment on this issue.

You were on that Blue Ribbon Commission and are a true expert on nuclear waste disposal. We should all listen very carefully to what you have to tell us today.

Thank you, Mr. Chairman, and look forward to the testimony of the Secretary.

Mr. SHIMKUS. And I thank my colleague. The gentleman yields back his time.

And I just want to reiterate I agree with the ranking member that we do appreciate you coming here. We know it is extraordinary for a Secretary to come to a lowly subcommittee, but we are pleased to have you.

And with that, I would like to recognize you for 5 minutes for your opening statement.

STATEMENT OF ERNEST MONIZ, SECRETARY, DEPARTMENT OF ENERGY

Mr. MONIZ. Thank you, Mr. Chairman, but I will start by disputing your characterization as lowly. I think and actually I would

say, as you both have said, it may be a bit unusual but I really appreciate the chance to come here and to start a dialogue on this important issue. As you know, I have been working on this issue, thinking about this issue for a long time, and I come here in a sense of hopefully we can pragmatically find a path forward.

So, Chairman Shimkus and Upton and Ranking Members Tonko and Waxman, members of the committee, thank you again for inviting me here to discuss nuclear waste issues and the activities at the administration is ongoing to meet the challenge of managing and disposing of used nuclear fuel and high-level radioactive waste.

As was stated in January of this year, the administration, Department of Energy released its strategy for the management and disposal of used nuclear fuel and high-level radioactive waste based on the recommendations of the Blue Ribbon Commission on which, again, I did have the pleasure of serving under the leadership of Lee Hamilton and Brent Scowcroft.

The administration clearly embraces the principles of the Commission's core recommendations, supports the goal of establishing a new, workable, long-term solution for nuclear waste management. I would also like to observe, as was noted, that a bipartisan group of Senators has introduced a bill adopting the principles of the Blue Ribbon Commission. I testified before that Senate Energy Committee yesterday and was encouraged by the progress they had made towards addressing the most complex of issues. And I appear today before this committee to reinforce that the administration is ready and willing to engage with both Chambers of Congress to move forward.

Any workable solution for the final disposition of used fuel and nuclear waste must be based not only on sound science but also on achieving public acceptance at the local, State, and tribal levels. When this administration took office, the timeline for opening Yucca Mountain had already been pushed back by 2 decades, stalled by public protest and legal opposition with no end in sight. It was clear the stalemate couldn't continue indefinitely.

Rather than continuing to spend billions of dollars more on a project that faces such strong opposition, the administration believes a pathway similar to that the Blue Ribbon Commission laid out, a consent-based solution for the long-term management of our used fuel and nuclear waste is one that meets the country's national energy security needs, has the potential to gain the necessary public acceptance, and can scale to accommodate the increased needs for future that includes expanding nuclear power and deployment.

The strategy lays out plans to implement with the appropriate authorizations from Congress—and we do need those authorizations—a long-term program that begins operations of a pilot interim storage facility, advances toward the siting and licensing of a larger interim storage facility, and makes demonstrable progress of the siting and characterization of repository sites to facilitate the availability of one or more geological repositories.

Certainly, consolidated storage is a critical component of an overall used fuel and waste management system and offers a number of benefits such as offering an opportunity to remove fuel from shutdown reactors, meeting waste acceptance obligations of the

Federal Government sooner, and reducing the Government's liabilities caused by delayed waste acceptance.

No matter how many facilities or what specific form they take, we believe a consent-based approach to siting is critical to success. The administration supports working with Congress to develop a consent-based process that is transparent, adaptive, and technically sound, as recommended by the Commission. The Commission emphasized that flexibility, patience, responsiveness, and a heavy emphasis on consultation and cooperation will all be necessary in the siting process and in all aspects of implementation.

The strategy also highlights the need for a new waste management and disposal organization to provide the stability, focus, and credibility to build public trust and confidence. Again, there are multiple models that exist along a continuum from a Government program to Federal corporations. But whatever form the new entity takes, organizational stability and appropriate level of autonomy, leadership continuity, oversight and accountability, and public credibility are all critical attributes for future success.

Finally, the Department has also initiated the Blue Ribbon Commission recommended revisiting of the decision to co-mingle commercial used fuel and defense waste.

So we are facing a unique opportunity to address the needs of the back end of the nuclear fuel cycle by setting it on a sustainable path and providing the flexibility needed to engage potential host communities and anticipated advancements in technology. We need to move forward with tangible progress toward used fuel acceptance initially from closed reactor sites and providing more certainty for the nuclear industry. This process is critical to assure the benefits of nuclear power are available to current and future generations.

And I will be happy to answer any questions that you have, Mr. Chairman. Thank you.

[The prepared statement of Mr. Moniz follows:]

**Statement of Dr. Ernest J. Moniz
Secretary of Energy
Before the
Subcommittee on Environment and the Economy
Energy and Commerce Committee
U.S. House of Representatives
July 31, 2013**

Chairman Shimkus, Ranking Member Tonko, and members of the Subcommittee thank you for inviting me to talk about the Administration's strategy and activities to fulfill its obligations to manage and dispose of used nuclear fuel and high-level radioactive waste.

The United States, like all countries, faces challenges associated with ensuring its people have access to affordable, abundant, and environmentally friendly sources of energy. President Obama has made climate change mitigation a priority and set a goal of reducing emissions in the range of 17 percent below 2005 levels by 2020. The promise of nuclear power is clear. Electricity generation emits more carbon dioxide in the United States than transportation or industry, and nuclear power is already the largest source of carbon-free electricity in this country. Nuclear power has an important role in President Obama's all-of-the-above approach to energy, and will play a significant part in reducing carbon pollution under the President's Climate Action Plan. As the President noted in Korea last spring, "in the United States, we've restarted our nuclear industry as part of a comprehensive strategy to develop every energy source." This includes providing conditional commitments to loan guarantees to support the first commercial reactors licensed and built in the U.S. in three decades. Currently, we have five new commercial nuclear reactors under construction, including four AP1000 reactors, with passively safe features. The Department of Energy (DOE) is also helping accelerate the commercialization of first generation of Small Modular Reactors (SMR) through a cost shared program with industry. We believe SMRs will be part of the future model of nuclear energy worldwide, where both SMRs and gigawatt-class reactors are deployed depending on the requirements.

Nuclear power has reliably and economically contributed almost 20 percent of electrical generation in the U.S. over the past two decades. It remains the United States' single largest contributor (more than 60 percent) of non-greenhouse-gas-emitting electric power generation. We believe that nuclear energy will continue to be an important part of the Nation's low carbon future.

Any workable solution for the final disposition of used fuel and nuclear waste must be based not only on sound science but also on achieving public acceptance at the local and state/tribal levels. When this Administration took office, the timeline for opening Yucca Mountain had already been pushed back by two decades, stalled by public protest and legal opposition, with no end in

sight. It was clear that the stalemate could continue indefinitely. Rather than continuing to spend billions of dollars more on a project that faces such strong opposition, the Administration believes a pathway similar to that the Blue Ribbon Commission laid out — a consent-based solution for the long term management of our used fuel and nuclear waste — is one that meets the country's national and energy security needs, has the potential to gain the necessary public acceptance, and can scale to accommodate the increased needs of a future that includes expanded nuclear power deployment.

The Administration's *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste* provides a basis for discussions between the Administration and Congress on a path forward for disposal of nuclear waste and provides near-term actions to be implemented by the Department of Energy pending enactment of new legislation. We are facing a unique opportunity to address the needs of the back-end of the nuclear fuel cycle by setting it on a sustainable path and providing the flexibility needed to engage potential host communities and anticipate advancements in technology development. I appear before this committee today to reinforce that the Administration is ready and willing to engage with both chambers of Congress to move forward.

Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste

Finding a solution to managing and disposing the nation's high-level radioactive waste and used nuclear fuel is a long-standing challenge. Such a solution, however, is necessary to assure the future viability of an important carbon-free energy supply and further strengthen America's standing as a global leader on issues of nuclear safety and nonproliferation.

In FY 2010, Secretary Chu, at the direction of President Obama, established the Blue Ribbon Commission on America's Nuclear Future (BRC, or the Commission) composed of representatives from government, labor, academia and industry. The charter charged the Commission with conducting a "comprehensive review of policies for managing the back end of the nuclear fuel cycle, including all alternatives for the storage, processing, and disposal of civilian and defense used nuclear fuel, high-level waste, and materials derived from nuclear activities... [and to] provide advice, evaluate alternatives, and make recommendations for a new plan to address these issues." The Commission issued its final report on January 26, 2012.

In January 2013, the Administration released its *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste*, which endorses key principles of the Commission's report. The *Strategy* lays out plans to implement, with the appropriate authorizations from Congress, a long-term program that begins operations of a pilot interim storage facility, advances toward the siting and licensing of a larger interim storage facility, and

makes demonstrable progress on the siting and characterization of repository sites to facilitate the availability of a geologic repository. It is important to stress that neither the BRC recommendations, nor the Administration's *Strategy*, make recommendations on siting of such storage facilities or repositories.

As noted, the Administration's *Strategy* endorsed the concept of the development of three different, but intimately related, facilities. While the *Strategy* indicates one of each of three separate facilities, it is conceivable, as the result of a consent-based siting process, that some or all of these facilities could be co-located and/or more than one of each type could be constructed.

Consolidated interim storage is a critical component of an overall used fuel and waste management system and offers a number of benefits. As outlined in the *Strategy*, it offers an opportunity to remove fuel from shutdown reactors – places where in many cases removal of used fuel is one of the last steps to releasing the site for other uses. There are now twelve such sites. In addition, a consolidated interim storage facility could enable the Federal government to begin meeting its waste acceptance obligations sooner and ultimately reduce the government's liabilities caused by its delay in meeting its obligations. These liabilities are currently projected to be as much as \$23 billion over the next 50 years, assuming waste pick-up begins in 2020. Also, a consolidated interim storage facility or facilities would provide additional capability to receive spent fuel in emergency situations. It would allow for repository designs for waste emplacement after a sustained cooling period. Finally, an interim storage facility would also support the repository by providing a buffer for disposal operations and flexibility for the system as a whole, even potentially providing the capability to package waste for disposal prior to shipment to the repository. The BRC recommended that the interim storage facility include facilities to monitor and characterize waste packages over time and to have or develop the capability for making sure that the waste meets transportation criteria over time. In short, the BRC viewed a storage strategy as important, independent of the siting and timing of geologic repositories.

The Administration supports the development of a pilot interim storage facility with an initial focus on accepting used nuclear fuel from shut-down reactor sites. Acceptance of used nuclear fuel from shut-down reactors provides a unique opportunity to build and demonstrate the capability to safely transport and store used nuclear fuel, and therefore to make progress on demonstrating the federal commitment to addressing the used nuclear fuel issue. A pilot would also build trust among stakeholders with regard to the consent-based siting process and commitments made with a host community for the facility itself, with jurisdictions along transportation routes, and with communities currently hosting at-reactor storage facilities. There are reports that a number of communities are exploring the possibility of hosting a consolidated storage facility.

Beyond a pilot-scale facility, the Administration supports the development of a larger consolidated interim storage facility with greater capacity and capabilities that will provide flexibility in operation of the transportation system and disposal facilities. A larger-scale facility could take possession of sufficient quantities of used nuclear fuel to make progress on the reduction of long-term contractual liabilities, and could also accept defense wastes. In parallel, as supported in the Administration's *Strategy* and recommended by the BRC, DOE has initiated an analysis of the pros and cons of commingling civilian and defense waste.

The rationale for deploying interim storage in no way minimizes the need for a permanent disposal capability, and the Administration is committed to advancing development of both interim storage and geologic disposal facilities in parallel, even though they may become operational at different times. The development of geologic disposal capacity is currently the most cost-effective way of permanently disposing of used nuclear fuel and high-level radioactive waste while minimizing the burden on future generations. The Administration agrees with the BRC that linkage between storage and disposal is critical to maintaining confidence in the overall system. Therefore, efforts to implement storage capabilities within the next 10 years will be accompanied by actions to engage in a consent-based siting process and initiate preliminary site investigations for a geologic repository.

No matter how many facilities or what specific form they take, a consent-based approach to siting is critical to success. The Administration supports working with Congress to develop a consent-based process that is transparent, adaptive, and technically sound. The BRC emphasized that flexibility, patience, responsiveness and a heavy emphasis on consultation and cooperation will all be necessary in the siting process and in all aspects of implementation. Experiences in other countries indicate that a consent-based process – if developed through engagement with states, tribes, local governments, key stakeholders, and the public – can be successful. For example, Sweden and Finland have successfully executed programs to select a site among multiple volunteer communities. Others such as France, Switzerland, and Canada, have programs underway that appear to be demonstrating some success. DOE is currently evaluating critical success factors in the siting of nuclear facilities in the U.S. and abroad to facilitate the development of a siting process.

The *Strategy* highlights the need for a new waste management and disposal organization to provide the stability, focus, and credibility to build public trust and confidence. Again, there are multiple models that exist along a continuum from a government program to federal corporations – entities that report to a cabinet secretary and those that have their own board of directors that report independently to the President. Whatever form the new entity takes, organizational stability, an *appropriate* level of autonomy, leadership continuity, oversight and accountability, and public credibility are critical attributes for future success. Further, the authorities and responsibilities of the new organization are more important than the specific form. The

Administration will work with Congress to ensure that the authorization of any new body established for this purpose provides adequate authority and leadership as well as appropriate oversight and controls.

The Administration also recognizes that providing predictable funding is critical to the success of the nuclear waste mission. The *Strategy* and the FY 2014 President's Budget propose a funding approach that contains three critical elements: discretionary appropriations within existing spending caps to pay for program management and administrative support costs; legislative reclassification of annual fee income from mandatory to discretionary or a direct mandatory appropriation to make dedicated funds available in sufficient amounts for multi-year projects and program activities without competing with other government priorities; and eventual access to the existing balance of the Nuclear Waste Fund in the Treasury.

Full implementation of this program will require legislation to enable the timely deployment of the system elements noted above, independent of the process to site storage and disposal facilities using a consent-based approach. The Administration supports the goal of the Nuclear Waste Administration Act of 2013 recently introduced in the Senate to establish a new, workable, long-term solution for nuclear waste management and looks forward to working with Congress to move forward on this important national issue. The constructive efforts and dedication of Senators Wyden, Murkowski, Feinstein and Alexander are deeply appreciated. In the meantime, the Administration, through the Energy Department's Office of Nuclear Energy, is undertaking activities consistent with existing Congressional authorizations and appropriations to plan for the eventual transportation, storage, and disposal of used nuclear fuel.

Ongoing Activities

Since the closure of the Yucca Mountain Project in 2010, the Department of Energy has continued activities related to the management and disposal of used nuclear fuel and high-level radioactive waste as part of its Fuel Cycle Research and Development program. Initial activities were outlined in DOE's *Nuclear Energy Research and Development Roadmap*, sent to the Congress in 2010, and included research into the performance of high burn-up used fuel in storage, among other activities. The roadmap noted the establishment of the Blue Ribbon Commission on America's Nuclear Future and acknowledged that all research and development activities and plans outlined would be revisited and revised as needed to reflect the Commission's findings and associated Administration decisions while, at the same time, remaining consistent with existing statutes.

In December 2011, the President signed the Consolidated Appropriations Act of 2012, which provided \$60 million in funding for used fuel management and disposal activities. Specifically, the Joint Explanatory Statement accompanying the bill provided that DOE should build upon its current knowledge base to fully understand all repository media and storage options and their

comparative advantages and expand its capabilities for assessing issues related to storage of spent fuel.

In its final report in January 2012, the Blue Ribbon Commission noted the need for near-term actions that can lay the groundwork for the next generation of nuclear waste policies and programs. For the most part, these near-term activities identified by the BRC were encompassed in activities already being undertaken by the Department. It included in its recommendations:

- Continuation of a research effort in used fuel and storage system degradation phenomena, vulnerability to sabotage and terrorism, and others.
- Moving forward with geologic disposal through valuable, non-site specific activities, including R&D on geological media, work to design improved engineered barriers, and work on the disposal requirements for advanced fuel cycles.
- Development of a research, development, and demonstration plan and roadmap for taking the borehole disposal concept to the point of a licensed demonstration.
- Performance of system analyses and design studies needed to better integrate storage into the waste management system, including standardization of dry cask storage systems and development of a conceptual design for a flexible federal spent fuel storage facility.
- Development of a database to capture the experience and knowledge gained from previous efforts to site nuclear waste facilities in the United States and abroad.
- Completion of policies and procedures for providing technical assistance funds to states, tribes, and local jurisdictions which are likely to be traversed by transportation shipments.

The Administration's *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste* recognized the ongoing research and development, analytical and planning activities already underway and endorsed them as laying the groundwork for implementation of the *Strategy*. DOE is currently undertaking activities to address these recommendations. For example, DOE is working with industry to conduct R&D (lab, field, and modeling) to further develop the technical basis for continued safe storage. Specifically, a key element of the storage R&D is to implement, on a cost-sharing basis with industry, a full scale storage demonstration project focused on getting field information on the long term storage of high burn-up fuel. This demonstration project was awarded in April.

DOE is also working to analyze the characteristics of various geologic media that are potentially appropriate for disposal of radioactive waste. This research will help provide a sound technical basis for a repository in various geologic media, and will help provide confidence in whatever future decisions are made. To leverage expertise and minimize costs, DOE is taking advantage of existing analyses conducted by other countries that have studied similar issues.

With regard to borehole disposal, DOE is developing a draft plan and roadmap for a deep borehole project. The project would evaluate the safety, capacity, and feasibility of the deep borehole disposal concept for the long-term isolation of nuclear waste. It would serve as a proof of principle, but would not involve the disposal of actual waste. The project would evaluate the feasibility of characterizing and engineering deep boreholes, evaluate processes and operations for safe waste emplacement and evaluate geologic controls over waste stability.

In FY 2012, DOE initiated system-level analyses for the overall interface between at-reactor consolidated storage and geologic disposal and the opportunities for use of standardized canisters, including the development of supporting logistic simulation tools to better understand aging of fuel and loading requirements. In addition, DOE acquired services of the industry to develop design concepts for a generic interim storage facility and in FY 2013 is evaluating their submissions.

A database on experiences with siting radioactive materials facilities both in the U.S. and abroad has been developed that will be a public resource and will inform the planning process. A report on the findings of the initial studies and an examination of case studies in the database of siting experience is being prepared and will be available this summer.

For transportation planning and engagement with stakeholders, DOE has convened a Working Group comprised of Federal, State, and Tribal governmental representatives to address training-related issues and develop a revised policy for preparing public safety officials along proposed transportation routes, as required by Section 180(c) of the Nuclear Waste Policy Act. The Working Group will analyze and, when possible, make recommendations on specific issues related to Section 180(c) policy and implementation.

The Department has also initiated studies to evaluate whether defense and commercial wastes should be “commingled” in a single repository. While it has been the U.S. policy since 1985 to commingle these wastes, the *Strategy* stated that the commingling of these waste would be the subject of analysis going forward, consistent with the urging of the BRC.

The President’s Fiscal Year 2014 Budget Request

The President’s FY 2014 budget request includes a multi-part proposal to move ahead with developing the nation’s used nuclear fuel and high-level waste management system outlined in the Administration’s *Strategy*. First, it lays out a comprehensive funding reform proposal that includes three elements. Ongoing discretionary appropriations within existing funding caps are included to pay for planning, management, and regulatory activities. . In addition, the proposal includes reclassification of existing annual fees from mandatory to discretionary or a direct mandatory appropriation, and eventual access to the balance of the nuclear waste fund. Included

in the amounts that would be made available under this proposal are defense funds to pay for the management and disposal of government-owned wastes within the overall system. These elements, in combination with anticipated offsets result in relatively modest pay-as-you-go cost of about \$1.3 billion. Significantly, the Administration proposes \$5.6 billion in spending to implement the *Strategy* over the next 10 years within the framework of this funding proposal.

Second, for the first time, the budget baseline reflects a more complete estimate of potential future costs of the liability associated with continuing to pay utilities based on the Government's liability for partially breaching its contract to dispose of used nuclear fuel. The cost of the Government's growing liability for partial breach of contracts with nuclear utilities is paid from the Judgment Fund of the U.S. Government. While payments are extensively reviewed by Department of Energy, and must be authorized by the Attorney General prior to disbursement by the Department of the Treasury, as mandatory spending they are not subject to Office of Management and Budget or Congressional approval. Previously, judgments were recorded in the budget largely after the fact, but until now the budget has included only a partial estimate of the potential future cost of continued insufficient action. To improve budget projections, the baseline for the Judgment Fund in the FY 2014 budget request reflects a more complete estimate of potential future cost of these liabilities. By reflecting a more complete estimate of the liability payments in the baseline, costs over the life of the nuclear waste management and disposal program would eventually be offset (for the purposes of scoring against the baseline) by reductions in liabilities as the Government begins to pick up sufficient waste from commercial sites.

Third, the President's budget includes funding for the Environmental Protection Agency (EPA) to begin the review and update of generic (non-site specific) disposal standards to help guide the siting of used fuel and high-level waste facilities. Current EPA standards for all sites other than Yucca Mountain are defined in 40 CFR Part 191, "Environmental Radiation Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes," and were last updated in 1993. The Administration agrees with the BRC that generally applicable regulations are more likely to earn public confidence than site-specific standards. In addition, having an updated generic standard will support the efficient consideration and examination of multiple sites.

Finally, in FY 2014, DOE's Office of Nuclear Energy will support the *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Waste* by funding activities to lay the ground work for the design of an integrated waste management system as well as related research and development work. Specifically, in the used nuclear fuel research and development area, the Department will work with industry on conducting investigations into the extended storage of used nuclear fuel and the transport of such fuel under a range of cask loadings. In addition, ongoing research into alternative disposal environments, including modeling,

experiments, and field tests will be continued. Finally, the Used Fuel Disposition program will undertake R&D activities to further the understanding of hydro-geochemical, physical geology, structural geology, geophysical state and engineering properties of deep crystalline rocks for deep borehole disposal.

In the management and disposal system design area, DOE will conduct system architecture and operating evaluations of various used fuel management systems, including consolidated and/or regional storage facilities, various repackaging scenarios and acceptance rates. DOE will also update transportation and storage system models, and develop cost databases. Further, DOE will conduct analyses for initial used fuel shipments from shutdown reactor sites including staffing, routing, procurement, operations, security, quality assurance, emergency response, training, logistics, site servicing, mobilization, operational readiness, and site servicing schedules. Work will also continue on an evaluation of standardized containers for storage, transportation, and potentially disposal. Outreach activities to stakeholders on transportation planning will also continue. When the new management organization is established in legislation, it will be able to take over many of these activities.

Closing

The Administration looks forward to working with this Committee and other Members of Congress on crafting a path forward for used nuclear fuel and high-level waste management and disposal. This progress is critical to assure that the benefits of nuclear power are available to current and future generations. I will be happy to answer any questions you may have.

Mr. SHIMKUS. Thank you, Mr. Secretary. Now, I would like to recognize myself for 5 minutes for the first round of questions.

Mr. Secretary, DOE's strategy is built on the premise that States will volunteer to host interim storage or a repository facility. Your testimony mentions reports that "a number of communities are exploring the possibility of hosting a consolidated storage facility." So the question is what States have indicated interest in hosting a facility?

Mr. MONIZ. First, I want to clarify, Mr. Chairman, that of course at this stage we are not engaging in any kind of negotiations or anything of that type. However, there have been a number of public reports, and in fact, one county has in fact passed a resolution expressing interest. Based also upon the experiences in Europe, we believe there are reasons for optimism that that can happen.

Mr. SHIMKUS. So we don't have States that are showing interest right now nor do we have Governors or U.S. Senators who are making a pitch for their State to be considered?

Mr. MONIZ. Well, it is certainly premature for any so-called pitch because right now we don't even have the authorities to move forward.

Mr. SHIMKUS. Well, no, it is not unlikely with the Blue Ribbon Commission and with the statements by this administration for States to have come forward and tried to organize their own political support with the Governor's office and their sitting Senators to be making this pitch that we would consider it. I mean there is nothing in law that says they can't start trying to mobilize public support in their State for following up on this proposal, is there?

Mr. MONIZ. Well, no. And again, as I have said, there have been certainly reports in the media—

Mr. SHIMKUS. But you can't tell us of any States which have done that initial work other than this one county in some State?

Mr. MONIZ. Well, one county that is in Texas, I mean, it was in public. A public resolution was passed. Recently, there were media reports which I have not attempted in any way to confirm, but there were statements made in Mississippi. There have been a number of statements made. But again, until we have the authorities, can put out a request for proposals, then I think frankly our position to provide some technical support for developing the information for potential communities I think would be premature frankly.

Mr. SHIMKUS. Well, it seems to me that a majority of these siting efforts and up with local community supporting a facility, maybe this county, and State-level officials opposing it. In fact, if I remember, the history of Yucca Mountain was the State General Assembly passed a resolution in support of the initial siting of Yucca Mountain.

We also have, you know, Nye County v. Nevada, Private Fuel Storage v. Utah, and your written testimony mentions consent-based areas that might be successful, i.e., Sweden and Finland, but you fail to mention England, a consent-based approach that the Commission touted, and what happened to that consent-based approach?

Mr. MONIZ. These are tortuous paths so—

Mr. SHIMKUS. So it was not successful as an—

Mr. MONIZ. Yes, we will——

Mr. SHIMKUS. So, I mean, my point is, what makes you believe that another consent-based approach somewhere in this country is not going to end up 30 years later and \$15 billion in the hole just like we have right now at Yucca Mountain?

Mr. MONIZ. Well, look, we all know all of these issues around nuclear waste take time. One example that, you know, it is not a high-level waste repository but——

Mr. SHIMKUS. Which is a lot different than what we are talking about.

Mr. MONIZ. But in WIPP with the transuranic facility we did have a similar situation with the State and now we have a very successful——

Mr. SHIMKUS. But I have personal knowledge of a U.S. Senator who fought against that as the Attorney General who is now a sitting U.S. Senator from that State. So——

Mr. MONIZ. Yes.

Mr. SHIMKUS [continuing]. We better be careful. I think this illusion that this consent-based approach is going to be panacea I am not sure is supported by the facts.

Another thing that the Blue Ribbon Commission that you are also promoting is that incentives are a key to success. And the estimated cost of this effort from the beginning is 5.6 billion over 10 years. Why not offer this money to Nevada?

Mr. MONIZ. Again, the recommendation is around a consent-based approach. Any State and community can come forward.

Mr. SHIMKUS. Part of the problem with the State of Nevada is they say show me the money. We don't believe you will follow through and there are not going to be any additional benefits. Wouldn't \$5.6 billion to a State that has a struggling economy, they could rebuild its roads, bring in rail lines, and probably continue to do what we have and the Department of Energy has done with UNLV, continue to support their advanced nuclear energy technology, don't you think that would be a good lure?

Mr. MONIZ. Again, we are advocating a consent-based approach. Any State can come forward, and we do believe that research, materials testing, characterization facilities are an important part of the storage program and it presumably would be part of a possible "incentive" program.

Mr. SHIMKUS. Thank you, Mr. Secretary. And I yield to Mr. Tonko for 5 minutes for questions.

Mr. TONKO. Thank you, Mr. Chair.

For the last few decades, the nuclear waste problem has been intractable. I think the Blue Ribbon Commission recommendations and the Department of Energy strategy document are helping to strike up conversation about where we go from here. Congress has an important role to play in finding solutions along with the Departments and the Commission.

Secretary Moniz, the Blue Ribbon Commission recommended a consent-based siting process for one or more centralized interim storage facilities and one or more permanent repositories. My understanding is that under current law the only repository site that can legally be considered is Yucca Mountain, and interim central-

ized storage is not an option in the absence of Yucca. Is that correct?

Mr. MONIZ. I believe that is a correct reading of the——

Mr. TONKO. So legislation would be necessary to establish a new siting process that ensures a project has the consent of the State and local governments?

Mr. MONIZ. Yes, sir. In fact, the Blue Ribbon Commission noted that almost all of the major steps required new statutory authorities.

Mr. TONKO. OK. Thank you. The Blue Ribbon Commission recommended that a new organization be created to manage and dispose of the Nation's nuclear waste. That is contemplated in the DOE's strategy, too. Would congressional action be needed to establish an independent agency and transfer the necessary functions and resources to that agency?

Mr. MONIZ. Yes, sir. It would be.

Mr. TONKO. There are also tricky funding and appropriations issues that need to be addressed to make sure that the funds put aside for constructing a repository or storage facility can actually be used for that purpose. Congress would need to address those issues through legislation, I believe. Is that correct?

Mr. MONIZ. Yes, sir. And again, if I may comment, we emphasized in the Commission and it is also true in the administration's strategy, that is what is most important is that whatever form the organization takes, it has the proper authorities. Key among those is a proper access to the funds.

Mr. TONKO. Thank you. And it sounds to me like DOE has taken an important step in developing a strategy, but you can't solve this problem alone, can you?

Mr. MONIZ. Correct, sir.

Mr. TONKO. So there is a bipartisan effort in the Senate to develop legislation to begin addressing these very tough issues. We haven't seen any effort on the House side, though. House Republicans seem unwilling to move past their fixation on Yucca Mountain. So my question would be while the Republicans seem to be waiting for a resolution to a pending lawsuit seeking to require the Nuclear Regulatory Commission to continue its work on its withdrawn DOE license application for Yucca, but a court opinion can't fix the funding problems or establish a new organization to handle the waste or and the staunch opposition to Yucca in Nevada, can it?

Mr. MONIZ. That is correct. And I would just add that, again, our view is that quite independent of the court decision, we should have these parallel tracks, the storage and repository development, and for that we will need the new authorities.

Mr. TONKO. Mr. Secretary, what message would you share with members of the subcommittee and the broader committee who remain focused exclusively on Yucca Mountain?

Mr. MONIZ. Well, again, our view is that we have obviously been having this stalemate over Yucca Mountain. There is a very good chance this may continue for some time. There are many steps needed. Even if the court were to rule for the NRC to proceed, there are still other actions of Congress, many actions in the State, et cetera. And again, our main message is that it will work out one

way or the other but let's move together on taking some practical steps that require new authorities that will move the ball forward, provide more confidence to industry, and start getting the Government accepting waste in the earliest possible time.

Mr. TONKO. What is the perceived timeline here if we are to move forward and with the ultimate goal of having a new repository available? Is there a certain given timeline that you can imagine would be required at a minimum?

Mr. MONIZ. Well, again, the administration strategy noted that we feel that we can certainly move if we have authority, let's say, this year, then we can move on the first interim storage site within a decade. That would allow us, for example, to move fuel away from the closed reactor sites, which would be, I think, an important step, but that a repository is likely to take decades to actually get functioning.

Mr. TONKO. Thank you. Thank you, Mr. Secretary. And, Mr. Chair, I yield back.

Mr. SHIMKUS. I thank my colleague. I would just remind him of the vote on the floor, 335 voting for Yucca, 118 Democrat, so it is just not a Republican fixation.

Now, I would like to yield to the chairman of the full committee, Mr. Upton, for 5 minutes.

Mr. UPTON. Well, thank you, Mr. Chairman.

And, again, I really appreciate, Mr. Secretary, you being here and sharing your comments. This is such an important issue for the country and you are right, we don't want gridlock on this. I would note it has been bipartisan in terms of trying to move a path forward for a couple of decades actually. And certainly your willingness to engage and to move the ball forward is very much appreciated.

And as Mr. Shimkus just said, and the votes we have had the last couple of years, not only this year but last year, the votes—326 to 81, 335 to 81, 337 to 87—is a pretty clear indication that the House at least has a very strong bipartisan majority towards trying to get this issue resolved. I would note that Mr. Dingell and myself wrote an op-ed piece about a month ago or so again urging the court to try and help resolve this and allow the NRC to move forward.

But let me go back. When you testified before our committee in June, Chairman Shimkus asked if you were aware of any technical or scientific issues that would prevent Yucca from being a safe repository, and you responded at that time, “this is an NRC decision ultimately to be taken.” And I certainly agree. And the public debate would clearly benefit from the NRC completing the independent assessment of Yucca.

Fortunately, we know that both the NRC and DOE do have the funds to support the completion of the NRC's safety evaluation report. However, we are all waiting for that DC Circuit Court of Appeals—maybe it will be coming this afternoon; who knows—which seems to be taking an inordinate amount of time compared to a number of other cases that they have had.

One of the issues that concerns me is what the ultimate cost of DOE's new strategy would be to the consumers and the taxpayers. We know that in '09, the Fee Adequacy Assessment showed that

the fee was adequate to fund Yucca Mountain. However, I am going to quote from DOE's Secretarial Determination of the adequacy of the Nuclear Waste Fund fees in January of this year before you are there. It said, "the consent-based approach to facility siting set forth in the strategy makes it impossible to assign meaningful probabilities to any geologic medium, and by extension, any cost estimate." Those were their words. So do you know whether the Nuclear Waste Fund today will be adequate to pay for all the facilities contained in the DOE strategy?

Mr. MONIZ. Mr. Chairman, certainly my understanding of the revised analysis that was done in response to the court, it looked at—I may get this not quite—I think it was something like 42 different scenarios into the future and found that with continuation of the one-mill-per-kilowatt-hour fee, that kind of rested kind of in the middle of the various scenarios. And so the argument was that at this stage the one-mill-per-kilowatt-hour fee would seem to be an appropriate place to go but there is considerable uncertainty of the lifetime costs depending upon which of those scenarios ends up being followed.

Mr. UPTON. Do you know whether the Nuclear Waste Fund could absorb the \$9 billion write-off for abandoning Yucca?

Mr. MONIZ. Well, if one looks at the ensemble of the scenarios in that Fee Adequacy Reassessment, the uncertainties of the spread was much, much larger than the amount that you have said. So that would again be in the uncertainties that we have today to be realized only over decades.

Mr. UPTON. Yes. So for us in Michigan, that 1/10-of-a-mill fee has meant \$600 million in essence collected from Michigan ratepayers. And so if you know Michigan at all, we have got one plant no longer operating, the Big Rock plant. I have two in my district, two facilities that are currently operating, and they have both run out of room so they are doing dry storage. I know Mr. Dingell has got a facility in his district as well.

So ultimately, we really do need this to be resolved and get on a glide path that can assure that there will be one safe place, at least one safe place for the high-level nuclear waste. And I appreciate your willingness to work with us and with our committee to ultimately get this thing done.

Mr. MONIZ. If I may comment, I think the situations that you have described are exactly what motivated the Blue Ribbon Commission discussions that we feel, and the administration has agreed with this, that moving to an initial kind of fast track pilot interim storage facility could handle the fuel from those shutdown reactors, and that would allow, you know, restoration of that site to other activities.

And of course we know that a substantial fraction of plants are running out of space and that is where the consolidated storage site—the issue is fuel acceptance. I mean that is the key issue for the plants. And this would allow us to start to move the fuel and both alleviate the issues at the plants and lower the liabilities for the Government by beginning to move the fuel. So that is why I mean, again, we think that a parallel track of the storage and repository or repositories will give us the flexibility and the adaptability to start moving and except fuel in the next decade.

Mr. UPTON. I yield back.

Mr. SHIMKUS. The chairman's time is expired.

The chair now recognizes the ranking member, Mr. Waxman, for 5 minutes.

Mr. WAXMAN. Thank you, Mr. Chairman.

Secretary Moniz, I thank you again for being here today to discuss the administration's strategy for managing the country's nuclear waste.

Over the last 2 years, this not lowly but very important subcommittee has heard testimony from a number of witnesses on the nuclear waste issue, including testimony from the State of Nevada about why many Nevadans oppose Yucca Mountain nuclear waste depository. Martin Malsch, testifying on behalf of the State of Nevada, told the committee "opposition to the Yucca Mountain project in Nevada was not always a given." But Congress and Federal agencies took several actions that destroyed the State's trust in the process and locked in opposition.

I would like to ask you a few questions about how to move beyond the Yucca Mountain stalemate and learn from our mistakes in Nevada. In your testimony you say, "any workable solution for the final disposition of used fuel and nuclear waste must be based not only on sound science and also on achieving public acceptance at the local, State, and tribal levels." Let's start with sound science you say is necessary. What are the key scientific questions that need to be answered to satisfy concerns about the safety of nuclear waste disposal?

Mr. MONIZ. Well, there are a number of scientific questions. Ultimately, it comes down to understanding the form of the waste package, its interaction with the host environment, and the potential for having some elements go into the environment and propagate over long periods of time. That is what is a very detailed analysis looking at both geology, hydrology, and the materials issues around integrity of the package.

Mr. WAXMAN. The State of Nevada and Clark County raised particular concerns about how EPA and other Federal agencies set safety standards for Yucca Mountain alleging that these standards were tailored to make sure Yucca met them. The State of Nevada told our committee that these changes "utterly destroy the credibility of the program." How should EPA and other Federal agencies approach the regulatory process to ensure that any safety standards are both sufficient and credible with concerned stakeholders?

Mr. MONIZ. Well, again, if I go back to the Blue Ribbon Commission recommendations, the Commission emphasized that what really needs to be set first are kind of generic safety standards before one starts tailoring to an individual site. So again, we think that the way that the Yucca Mountain decision was made, A) raises this problem, as you have referred to many times, in terms of it was not a consent-based process and that in itself created conditions. It also had the effects of highly restricting what the Department could do over many years in terms of exploring different geologies and it basically did not have this approach, as I mentioned, where one such generic safety standards that one then applies to various characterized local sites.

Mr. WAXMAN. So it could apply to a number of multiple sites?

Mr. MONIZ. Yes.

Mr. WAXMAN. Having updated generic standards will also support the efficient consideration as you look at—

Mr. MONIZ. Yes. And then that would inform the regulatory process. And as we have all said, particularly when you look also, you know, the Nuclear Waste Policy Act also had a cap of 70,000 tons and we know very well that even if there were no nuclear reactors built, we would be way, way past that amount. We have to look at the questions of other repositories, certainly be prepared for that possibility.

Mr. WAXMAN. Now, no project will ever enjoy universal support so how do you envision defining consent? In the case of Nevada, the Yucca Mountain project enjoys some local support but faces strong opposition from the State and key counties. What can the Federal Government do to win support of a whole State that is wary of hosting a repository or interim storage facility even if the facility enjoys local support?

Mr. MONIZ. Well, again, we believe or at least I should say I believe that ultimately it is a very iterative process based upon, as I said in my testimony, continuous open cooperation and consultation at all levels. As we said earlier, and I think it is an example again—I will concede to the chairman's point that clearly the WIPP facility in New Mexico is a transuranic waste facility, not high-level waste, but the fact is that was a case where it took many, many years. There was litigation involved to win the confidence and trust all along the chain of responsibility. And now, as a result, well, I think we are into now our second decade of a highly successful operation there.

Mr. WAXMAN. So for the Congress, the take-home message should be that we can tackle this problem by ensuring the Federal agencies, or any new organization, has the authority it needs to implement a consent-based process that is transparent and rooted in science. With that—

Mr. MONIZ. That ultimately is the overarching, most important recommendation of the Commission.

Mr. WAXMAN. Thank you. Thank you, Mr. Chairman.

Mr. SHIMKUS. The gentleman's time is expired.

The chair now recognizes the chairman emeritus, Mr. Barton, for 5 minutes.

Mr. BARTON. Thank you, Mr. Chairman.

You know we are having another hearing on high-level nuclear waste when members of the audience are already asleep.

Mr. SHIMKUS. Wake up.

Mr. BARTON. I am not going to name names, but his initials are D.G.

But, Mr. Secretary, thank you for being here. And when I was a young man, some members of the audience have heard me tell the story, but it was my job to brief the then-Secretary of Energy on a proposed piece of legislation at the Department of Energy that came to be known as the Nuclear Waste Policy Act of 1982. And they felt that if an Aggie engineer could explain a bill to an oral surgeon, that we ought to be able to get it through the Congress. And we did, and who would have dreamed that in 2013 we would have the current Secretary of Energy debating yet again another

way to find a path forward on the storage of high-level nuclear waste?

My good friend from Illinois, the subcommittee chairman, asked you a question about what States might compete if we adopted your consent-based approach or the Department's consent-based approach? I would postulate that my State of Texas might actually offer to compete. The county in West Texas, Loving County, has already passed a resolution at the county level and has been engaged in Austin with the Governor and the Texas legislature. While it is never a given, certainly I think the State of Texas might adopt an approach where, on a local option basis, a county or an entity could compete for an interim storage facility.

I also know that at Yucca Mountain, we have spent \$15 billion and I think the subcommittee and the full committee chairman are absolutely correct in trying to get value for the taxpayer dollars and the ratepayer dollars that have been spent on that facility.

Again, I would ask as a question if we were to adopt through legislation, as you have at least suggested we might, a dual-track approach of an interim storage facility while we are waiting to license a permanent repository, that would not preclude Yucca Mountain being chosen as either the interim facility and/or possibly the permanent repository. Is that not correct?

Mr. MONIZ. Yes, I would agree. We view these as two linked but independent pathways.

Mr. BARTON. OK. And I believe I am correct, too, that under current law Yucca Mountain has been legally empowered to be an interim facility for storage. Is that not correct?

Mr. MONIZ. I would have to clarify that, Mr. Chairman Emeritus.

Mr. BARTON. Well, I think I am correct.

Mr. MONIZ. OK. Well, I will take, you know—

Mr. BARTON. I think lots of things, not all of them are correct, so maybe I am wrong on that. But I believe—

Mr. MONIZ. When you were a practicing engineer and I was a practicing scientist, we were always correct.

Mr. BARTON. Yes. You have talked in your testimony about a pending court case, and I think it is fair to say that the majority of the committee is very frustrated that the court should have ruled, has yet to rule. Do you have any indication of when we might get a ruling on the legality of what the Obama administration did in shutting down the Yucca facility?

Mr. MONIZ. No, sir. I have no insight whatsoever to as when a ruling would come, but I assure the committee, and as the administration has spoken, that whatever the ruling is, we will act appropriately and help to carry it out.

Mr. BARTON. Well, Mr. Chairman, I want to say in closing that I am a strong supporter of Yucca. In your absence, I went to the floor a week before last and opposed several amendments against Yucca. So I am pro-Yucca. But I don't want to have to serve as long as John Dingell has already served to finally find an answer to the high-level waste issue. And if we can adopt some sort of a dual approach where we push forward on licensing Yucca as a final repository while also letting States compete on an interim storage basis, I for one on the majority side would be supportive of that approach

with the appropriate safeguard and caveats about the money and the effort that has already been spent at Yucca Mountain.

So I thank the Secretary and his department for their efforts, and I hope that since we, this morning, passed an SGR fix that nobody thought could happen, this could be two in a row if we can pass a high-level waste bill out of this committee. That would be a tremendous accomplishment on your watch and Mr. Upton's watch and Mr. Tonko's and Mr. Waxman's watch. And with that, I yield back.

Mr. SHIMKUS. The gentleman yields back his time.

And I can assure my colleague that as long as Yucca Mountain is still in the mix, we can move forward. But I have no indication that the administration wants to move forward on Yucca Mountain.

So now, I recognize the gentleman from Michigan, Mr. Dingell, for 5 minutes.

Mr. DINGELL. Mr. Chairman, thank you for your courtesy, and I commend you for having this hearing.

Welcome, Mr. Secretary, to the committee. I note here in 2006 you wrote an article supporting Yucca Mountain. In 2011 you wrote another article saying there needs to be an alternative. So to assist the committee with our judgments here, you now believe that Yucca Mountain is no longer an option as a permanent repository? Please answer yes or no.

Mr. MONIZ. Congressman Dingell, with all due respect, it is a little bit more than yes or no. I would note that the article you referred to actually it is an op-ed, I think, in 2006, did say that DOE had to take a fresh look at assessing the suitability of Yucca Mountain, and it was not a complete—

Mr. DINGELL. What does that mean, Mr. Secretary? That you think it is still a viable thing—

Mr. MONIZ. Well, again, we—

Mr. DINGELL [continuing]. Or that it is not?

Mr. MONIZ. The view is that it needs both science and public acceptance. The latter is not there and we are not seeing an end to the stalemate.

Mr. DINGELL. With all respect, Mr. Secretary, you have taken both sides of this issue. We have shot about \$12 billion as near as I can figure, maybe 13 now, and the hole is still there and people are digging and doing things but nothing is happening. And we don't have any idea of when we are going to complete this problem or anything else.

Now, Mr. Secretary, would you please provide additional information for the record regarding the viability of Yucca Mountain as a permanent repository? And I will let you come up with whatever it is you feel you should like to say on that particular matter.

Mr. MONIZ. Yes, sir. We will.

Mr. DINGELL. Now, Mr. Secretary, do you have any plans to re-initiate DOE's license application to the NRC for review and final decision on Yucca Mountain? Yes or no?

Mr. MONIZ. No, but again if the court reinstates the NRC licensing process, then we will support it as needed, assuming we have the funds to do so.

Mr. DINGELL. Now, Mr. Secretary, the Blue Ribbon Commission of which you were a member was not allowed to examine Yucca

Mountain is a part of its study. Do you believe that doing a similar study again but including Yucca Mountain would be useful to the administration is a determinant of a path forward regarding nuclear waste storage? Please answer yes or no.

Mr. MONIZ. No, sir, I don't think that would be useful at this time. A commission like the Blue Ribbon Commission was very important to address the generic, nonsite-specific issues, as we discussed. For example, one of the problems is the need to get generic safety criteria before one starts moving into the consent—

Mr. DINGELL. So is the answer, Mr. Secretary, yes or no?

Mr. MONIZ. It was no. It was no, yes.

Mr. DINGELL. Yes or no?

Mr. MONIZ. It was a no, yes.

Mr. DINGELL. OK. Now, Mr. Secretary, most of BRC's recommendation is a consent-based approach where localities across the country could volunteer to be the site of a new repository. Under the best case scenario where all the units of government from local to State to Federal agree that there is a site that meets the needs of a repository of this kind, how long approximately would it take to create such a repository and how much would it cost?

Mr. MONIZ. Well, I think the estimate based upon the Fee Adequacy Assessment were approximately \$3 billion for preselection, site evaluation for a repository, and approximately 8 to 9 for site characterization and licensing. So altogether in the 10 billion, \$11 billion range.

Mr. DINGELL. Would you submit for the record your further comments on both of those two matters—

Mr. MONIZ. Yes, we would be pleased—

Mr. DINGELL [continuing]. How long and how much?

Mr. MONIZ. We would be pleased to.

Mr. DINGELL. Now, Mr. Secretary, the BRC report recommends, "access to the funds nuclear utility ratepayers are providing for the purpose of nuclear waste management," and you propose non-legislative as well as legislative changes to achieve this goal. Can access to the funds be gained through nonlegislative means? Yes or no?

Mr. MONIZ. I would say yes and no. We strongly feel that legislation really is the appropriate way to go. I think the principle administration's proposal and really the Commission's is somehow we need to have the funds and the expenditures either mandatory or discretionary but in a way that does not have these funds competing with the other Government priorities.

Mr. DINGELL. Would you submit further comments for the record?

Now, Mr. Secretary, would nonlegislative proposals recommend ways in which we could protect funds being deposited into the Nuclear Waste Fund? As you know, we have dissipated large sums of money. Can you answer yes or no to that, please?

Mr. MONIZ. Again, we feel legislation is the appropriate route.

Mr. SHIMKUS. The gentleman's—

Mr. DINGELL. Mr. Secretary, in the 2011 article I mentioned earlier, you note that you were a strong supporter of nuclear energy developing new nuclear technologies and investing in other energy

technologies. Based on recent appropriations and the recently passed Energy and Water appropriations from the House, do you believe that your department now has the resources to invest in these new technologies to prevent, as you put it, "America being less competitive in the global technology market?" Please answer yes or no.

Mr. MONIZ. Well, if the President's request is respected, then the Nuclear Energy Office has a very good plan in place to both support advanced reactor technology and the technology development for waste disposal. I would add to that, of course, beyond the appropriated amounts, the Department has made the conditional loan guarantee of \$8 billion roughly to build "first-mover" new nuclear plants, which is a critical issue for the future of nuclear power in this country.

Mr. SHIMKUS. The gentleman's time is expired.

Mr. DINGELL. Mr. Chair, I am over my time and I thank you, Mr. Chairman.

Mr. SHIMKUS. The chair now recognizes the gentleman from Texas, Mr. Hall, for 5 minutes.

Mr. HALL. Thank you, Mr. Chairman.

And, Mr. Secretary, I thank you for being here. Sometimes it is not good to have been here before like you have, the questions that you get put to you, but I will remember you on my Section 999. You were very knowledgeable on that. That is still up and you remember it was when you had energy at a certain level but we couldn't get it to the top of the water and we traded for technology from universities and others and paid them with the energy that we did get to the top of the water. So we didn't get it if they didn't get it to the top. They got it to the top and it is working and they are still trying to kill 999. I hope you will remember your position on that.

Mr. MONIZ. I remember your efforts very, very well leading that charge and I would say that as a fact I think the result has been some excellent, excellent research.

Mr. HALL. It is still working.

Mr. MONIZ. Especially on the environmental footprint of unconventional oil and gas production.

Mr. HALL. Yes, and thank you. And it is a pleasure to see you. I have a copy of a DOE presentation here from late June that indicates the size for the "larger interim storage facility," the one slated to be open in 2025 and the DOE strategy is 70,000 metric tons. Is that right? That is your—

Mr. MONIZ. Yes, sir. And that would be preceded by the pilot plant.

Mr. HALL. That is the entire inventory of what the nuclear industry is currently storing and the statutory size of Yucca Mountain, right?

Mr. MONIZ. Um-hum.

Mr. HALL. Mr. Secretary, how hard is the administration going to answer or how are they going to make people believe when you say that that facility is going to be temporary?

Mr. MONIZ. Well, I think this is, again, the so-called linkage issue and we think it is very important—

Mr. HALL. Right.

Mr. MONIZ [continuing]. That the action on the storage side is accompanied in parallel by adequate expenditures to establish one or more repositories.

Mr. HALL. How will DOE overcome concerns that a lot of people are going to have on the part of communities that an interim site could become a de facto permanent site if no other community could be found to host a permanent disposal facility area?

Mr. MONIZ. You know, again, as I have said, I think this is going to be a long discussion, and we also noted that there should be flexibility into the system so that the individual communities and States who are stepping forward as potential hosts can negotiate the linkages that they feel are appropriate to lend them confidence.

Mr. HALL. Well, the presentation—I don't know where it is there but I think we have seen it somewhere—estimates transporting the spent fuel to this larger interim storage facility at a rate of 3,000 tons a year, and that means that it would take over 23 years just to transport the spent fuel to the site. By the time the 70,000 tons was all transported, it would be 2048. That is a hard figure for me to think about being here and being sure that it happens just that way.

Mr. MONIZ. Yes, well, it is a major logistical challenge and I think no matter what repository, what storage sites one has, it is a major transportation campaign. I also served on a National Academy committee several years ago looking at transportation and a couple of things of note perhaps. One is that we felt that for the large campaign, a heavy reliance on trains would be a good thing. That is a big planning project. Secondly, we also noted that the number of used fuel movements in Europe already is approximately equal to all the movements we would need for 70,000 tons, and that has been handled in a pretty safe way.

Mr. HALL. But 2048 is the projected date for opening a repository under DOE's strategy.

Mr. MONIZ. It is approximate.

Mr. HALL. OK. Well, let me ask you, does that really make sense?

Mr. MONIZ. Well, I think, you know—

Mr. HALL. I think you have been around a long time and you are very knowledgeable.

Mr. MONIZ. To be honest, the Department has had an issue of perhaps too often providing optimistic dates for big projects and maybe to be a little more conservative is a good idea.

Mr. HALL. It is going to be hard to explain how they are going to spend 23 years transporting just to turn around and ship it all again. Is that going to cause some problems?

Mr. MONIZ. Well, of course, we are in no way precluding the possibility of—

Mr. HALL. DOE estimated—

Mr. SHIMKUS. The gentleman's time is expired.

Mr. HALL. DOE estimated the transportation costs for 70,000 metric tons to go to Yucca at 19 billion. I am anxious to watch what the analyzation is going to be on that. And my time really is up.

Mr. SHIMKUS. The gentleman's time is expired. I would remind him that if everything would have gone upon plan, Yucca would

have been open in 1998. Had the administration not pulled the plug when it did, we would be under construction right now.

The chair now recognizes the gentleman from Texas, Mr. Green, for 5 minutes.

Mr. GREEN. Thank you, Mr. Chairman, for holding the hearing. I want to thank Secretary Moniz for joining us.

The subcommittee examined the issue of nuclear waste storage in numerous hearings for the past several years. In 2011 as ranking member of the subcommittee, I had the opportunity to visit Yucca Mountain with Chairman Shimkus, and I supported the use of Yucca Mountain in the past and still believe it is a terrible waste of taxpayer dollars to have this \$12 billion facility sitting unused in the desert, although in all honesty, we are not going to sell that desert land for condos. And so I assume it will stay in our Federal land inventory. So maybe someday we have this hole underground, it can be used for long-term nuclear storage.

The termination of the project, though, has postponed our Nation's efforts and delayed efforts to permanently dispose of used nuclear fuel. It is now envisioned it will be storing these materials and dry casks for decades, not much longer than the original intended purpose. What is DOE doing to support the long-term storage of used nuclear fuel in these dry cask storage systems? And I will go forward after that. Is there any program at DOE to be able to deal with the amount of nuclear waste we are seeing?

Mr. MONIZ. Yes, sir. There is work going on and also historically we have seen collaboration with EPRI in terms of looking at the dry cask storage longevity and a particular focus right now is on the materials issues and really whether we can confidently expect century-scale storage.

Mr. GREEN. Between the 1980s and 2010 when Yucca Mountain was terminated, the Nation had invested billions of dollars in a scientific study at that site. The scope of this work spanned our entire national lab complex and many of our leading universities, a number of other respected institutions. What is the understanding and result of this study and what did we learn? How can we best apply the results of this work before going forward so that our investment is not wasted? You know, we know that at least politically in the foreseeable future, Yucca Mountain is not available, but we still need to plan for long-term storage, and I think that is what the Blue Ribbon Commission said.

Mr. MONIZ. Well, may I answer? Oh, yes. So, for example, I would pick out a couple of areas. One, it would be that I think the methodology was developed for developing large-scale reservoir and, if you like, a water basin modeling technique that one will need in any geology to go forward.

Another, I would say, is understanding how the form of waste package interacts with the environment. So I think the methodology for how one does characterization and waste package geochemistry interactions has been advanced.

Mr. GREEN. So we have learned something from the effort. And, as you know, and you served on it—and thank you for your service—the Blue Ribbon Commission recommended a consent-based approach to repository siting. With respect to Yucca Mountain project, there appears to be a division of the opinion. And having

been out there, and I think we met with about every county official from around that area who very much supported it. Obviously, the State of Nevada and Clark County doesn't. And that may have been different back years ago when it was selected.

How can we keep from having something, because these things take so long, getting permission? And there may be consent but a decade later all of a sudden the political will is not there. And, you know, I know there is a proposal for Pecos of Texas and New Mexico. There may be other locations but, you know, if we make a decision and the political will then changes, which is what seemed to happen out in Yucca Mountain, how did the Blue Ribbon Commission address that issue if we are going to look for consent now and expect that contract to last for decades?

Mr. MONIZ. Well, I think the Commission recognized that—well, first of all, again let me repeat that in the case, again, of a transuranic repository in New Mexico, little bit different animal, but that case where again it took an evolution of the community/State interaction. Secondly, the Commission recognized that each of these negotiations will be somewhat different, but in a generic sense, recommended a process that would have various steps and commitments to continue, which kind of ratcheted up at each step of the negotiation.

Mr. GREEN. I know I am almost out of time and I won't have time for all my questions, Mr. Chairman. I know of no country in the world that has long-term storage but our country is producing a lot of it and I would think it would be redundant to create a separate agency. I think we might need to fix the one we have so we don't add that bureaucratic delay in to getting forward with it.

But I thank you for the time.

Mr. SHIMKUS. The gentleman's time is expired.

The chair now recognizes the gentleman from Mississippi, Mr. Harper, for 5 minutes.

Mr. HARPER. Thank you, Mr. Chairman.

And, Mr. Secretary, thank you for taking your time to come visit with us on what is a very important and long-going issue.

In 1980, Congress passed the Low-Level Waste Policy Act providing a framework for States to voluntarily join compacts and then work within the compact to site a low-level waste disposal facility. While this merely addressed low-level waste, it provides relevant experience about a consent-based process for nuclear waste disposal. After the Act was passed in 1980, it wasn't until 1985 that Congress approved the compacts and then it was 1990 before a disposal facility opened in Utah but only for Class A waste, the lowest class of low-level waste.

Congress didn't approve the Texas/Vermont compact until 1988, 18 years after the Act passed, and the disposal facility in Texas didn't open until 2011 after a 7-year licensing process. To date, 33 years after Congress passed the 1980 Act, 34 States still remain without access to low-level waste Classes B and C disposal.

So my question is in light of the limited success and lengthy process for consent-based siting for low-level waste, what gives you confidence that DOE will find an interim storage site for used nuclear fuel and have them operating 8 years from now?

Mr. MONIZ. Well, first, I would note that, first of all, there is some success, and again I go back to the WIPP example in New Mexico which is for transuranic waste. And again, it took a long time. This goes back to Mr. Hall's question. We prefer to be conservative and set 2048 because these things take time. And I think we just have to start on that path. I personally remain optimistic that we will have communities coming forward and then provide technical assistance so that they can be certain that they have the technology base to move forward.

Mr. HARPER. Well, given your role on the Blue Ribbon Commission, are you familiar with the private fuel storage project in Utah which is the only interim storage facility ever licensed?

Mr. MONIZ. Am I familiar with it?

Mr. HARPER. Are you familiar with that?

Mr. MONIZ. Yes. Yes. Um-hum.

Mr. HARPER. Do you know how long the NRC took to issue that license?

Mr. MONIZ. No, I do not, sir.

Mr. HARPER. OK. If I told you 8 years, would that surprise you?

Mr. MONIZ. No.

Mr. HARPER. OK. All right. Do you know the status of that license now?

Mr. MONIZ. No, I do not.

Mr. HARPER. OK. It is my understanding the consortium asked to the NRC to terminate the license late last year.

Mr. MONIZ. I see. Um-hum.

Mr. HARPER. So I think PFS is an example of how a local community, in this case the Goshute Indians, initially supported a project but State officials opposed it, just like the situation with Yucca Mountain. It is also an example of how licensing such a project is not as expedient as sometimes the DOE strategy suggests.

So, you know, what we have here is a very serious issue. It is something that we have dealt with for now decades. I don't believe that the formation of a new Federal agency to oversee management of nuclear waste is the answer. I believe that that would just create additional delays. So I would hope that we could continue to work on this issue and I certainly want to thank you for your time today to come share this with us.

And with that, I yield back.

Mr. SHIMKUS. If the gentleman would yield.

Mr. HARPER. Yes, I will yield to the chair.

Mr. SHIMKUS. And I would just highlight we did this when the Blue Ribbon Commission testified before us, and there is a map of Nevada. We talk about local interests. Two points of this is that all of the counties minus Clark have resolutions on record supporting Yucca Mountain. And then we talk about local issues and you use even in your testimony Finland and Sweden. A land base of that siting proposal which you would call local, do you know what would be local for Yucca Mountain? Who would be considered the local landowners? It would be the Federal Government. That is how far away and expansive the Federal property as Yucca. Who is local would be us. We are the local interest of concern, and if we

are not, the local communities that all have gone on resolutions in support of Yucca, they are on record.

So, you know, I am kind of getting tired of this bashing of Nevadans that they are all one side when there is a strong vocal group of Nevadans who want this, hence going back to the \$5.6 billion that I think you should put on the table to help convince maybe the other folks from Nevada.

So with that, I would like to recognize my colleague from California, Mrs. Capps, for 5 minutes.

Mrs. CAPPS. Thank you, Mr. Chairman for it and thank you, Secretary, for being here today and participating.

And, as you know, like it or not, nuclear waste is a reality. Part of that reality is that nuclear waste is going to be around for a long, long time, far beyond the lifetimes of our children and our grandchildren. But as the creators of this waste, I believe that we have a responsibility to put in place a long-term plan to store it safely. And in the absence of such a plan, however, spent nuclear fuel will continue to be stored for the foreseeable future onsite right at nuclear power plants like Diablo Canyon, which is in my Congressional District.

I have been pleased to see more spent fuel being moved out of high density pools and into dry cask storage at Diablo Canyon and also across the country. These casks are more stable and safer, but they are not a permanent solution for spent fuel storage in my opinion. Do you agree?

Mr. MONIZ. Yes. As I said—

Mrs. CAPPS. They are not a permanent solution—

Mr. MONIZ [continuing]. Century-scale looks to be the kind of scale.

Mrs. CAPPS. Pardon?

Mr. MONIZ. We think the dry cask storage for the order of one century—

Mrs. CAPPS. One century they will work but not a permanent solution—I mean we can't—

Mr. MONIZ. Not a millennium.

Mrs. CAPPS. Not a millennium?

Mr. MONIZ. Right.

Mrs. CAPPS. As we all know, implementing a permanent storage solution has proven to be quite difficult. I commend the administration for moving the ball forward with the Blue Ribbon Commission report and the strategy released earlier this year, but given the serious challenges that still lie ahead, my constituents and I remain concerned that Diablo Canyon could become a de facto long-term storage site. It has already been over 30 years since Congress first directed the Department of Energy to remove and store spent nuclear fuel from power plants. So, Mr. Secretary, what happens if it takes another 30 years or even longer to implement a permanent storage plan? Does DOE have a contingency plan to handle long-term onsite storage of spent nuclear fuel?

Mr. MONIZ. Well, first, I think the general technical judgment is that continued onsite storage moving in from pools to dry casks is a reasonably safe approach but it is not a system that we want at all. And that is exactly why we feel that the strategy put out following the Commission's recommendations to aggressively pursue

the parallel paths of consolidated storage and repositories is the right one and it gives flexibility, adaptability, and it won't be immediate. We think we have a chance to start moving some fuel in about 10 years but only if we start now.

Mrs. CAPPS. Right. So I will just move ahead. One of the most important elements of the Blue Ribbon Commission report and the DOE strategy is the consent-based approach for locating the permanent storage facility. Engaging local communities in this process is critical, especially for the consolidated facility, but it is also crucial to engage with the communities where the fuel is currently being stored and could be traveling through. I am very concerned about the transportation. Once a permanent site is found, how do we move this spent fuel safely? This is a top priority for my constituents in San Luis Obispo. They have serious concerns about the risks involved in moving the spent fuel safely through their communities, and they want their voices heard in this process. So to what extent is DOE engaging with communities where there is this storage now occurring and so many concerned constituents who are worried about how that transporting is going to happen through their communities?

Mr. MONIZ. So the Department has recently done a number of transportation studies, and again, I refer to the National Academy report of—6 or 7 years ago I was a member of that group as well. Again, I think two points, maybe one to reiterate is that the amount of fuel movement called for for all of the fuel we have today is very comparable to what Europe has already done with a very, very good safety record. However, clearly, we have to A) do it very well, but B) the report emphasized strongly the same thing as you have emphasized, the need to early on work with the communities along transit pathways, instruct in emergency response kinds of activities, communicate, know what is happening. That is very, very important.

So I think as soon as we understand that we are moving towards a system to begin moving that fuel, we need to get very aggressive in that community outreach.

Mrs. CAPPS. Well, I appreciate knowing that. I share your concerns about it and I yield back.

Mr. SHIMKUS. The gentlelady's time is expired. And on her point, though, that I think in testimony yesterday the Secretary said Plan B is to leave on site. That was testimony yesterday. Is the Plan B right now—

Mr. MONIZ. Well, as I—

Mr. SHIMKUS [continuing]. If all else fails—

Mr. MONIZ. When I said it, it is the ground truth. If we can't move it—

Mr. SHIMKUS. Well, I am just trying to lay out the facts as was testified yesterday that Plan B would be to keep onsite.

Mrs. CAPPS. Is it permanent? Are you—

Mr. SHIMKUS. That is their Plan B.

Mr. MONIZ. If I may clarify, what I said again the ground truth is if we can't move it, it stays where it is. It is a totality. That is why we have to have the ability to move it.

Mr. SHIMKUS. Just trying to get some transparency here, Mr. Secretary.

Mr. MONIZ. For that, we need the authorities from Congress.

Mr. SHIMKUS. The chair now recognizes the gentleman from Ohio, Mr. Johnson, for 5 minutes.

Mr. JOHNSON. Thank you, Mr. Chairman. And, Mr. Secretary, it is good to talk with you again. Thank you for being here with us today.

Most of DOE's current nuclear waste management activities rely on taxpayer funding appropriated in 2012 and under the Continuing Resolution for 2013. This means that the taxpayer is currently funding the costs of DOE's effort to start over, breaking the historic principle that the beneficiaries of the electricity, the consumers, pay the costs of disposal. For how long and for what cost does the administration support continuing the policy of having the taxpayer foot the bill?

Mr. MONIZ. Well, sir, I think, first of all, let me refer to the letter to Mr. Shimkus that he had read into the record looking at all of the activities and the authorities, et cetera. This, by the way, has been reviewed by our general counsel and by the Department of Justice to make sure all the authorities were proper in terms of what was used for appropriated funds and what was used by waste fund.

But I think, as you referred it, to the 2012 Consolidated Appropriations Act, there was explicit language to look at fuel management and disposal activities. In my view, those are very generic activities. Frankly, those are some of the activities that the Department was proscribed from doing by the 1987 action, and my view, to be honest, very mistakenly, that this research on the back end of the fuel cycle was always important and it is very important that we continue to do it now.

Mr. JOHNSON. OK. Changing subjects a little bit, there have been inaccurate statements how Yucca Mountain can only hold 70,000 metric tons, so even if we build Yucca, we will still need more than one repository. I would like to clarify for the record that is a statutory not a scientific limit.

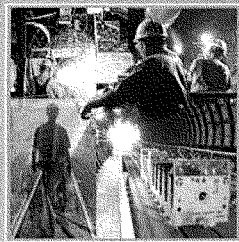
Mr. MONIZ. Um-hum.

Mr. JOHNSON. In the Yucca Mountain EIS, DOE analyzed, "the total projected inventory of commercial spent nuclear fuel and high-level radioactive waste plus the inventories of commercial greater than Class C waste and DOE special performance assessment required waste." In DOE's 2008 report to Congress on the need for a second repository, DOE referenced studies of repository designs three times the area of the design used to accommodate the 70,000 metric tons and an independent study that concluded Yucca Mountain could accommodate from 4 to 9 times the statutory limit. Mr. Chairman, I would like to insert DOE's 2008 report to the hearing record.

Mr. SHIMKUS. Is there objection? Hearing none, so ordered.

[The information follows:]

DOE/RW-0595



**THE REPORT TO
THE PRESIDENT
AND THE CONGRESS
BY THE
SECRETARY OF ENERGY
ON THE NEED FOR
A SECOND REPOSITORY**

December 2008

U.S. Department of Energy
Office of Civilian Radioactive Waste Management
Washington, D.C.



The Report to the President and the Congress by the Secretary of Energy
on the Need for a Second Repository

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THE REPORT TO THE PRESIDENT AND THE CONGRESS BY THE SECRETARY OF ENERGY ON THE NEED FOR A SECOND REPOSITORY

1. FINDING AND RECOMMENDATION

The Nuclear Waste Policy Act of 1982, as amended (NWPAct), sets a statutory capacity limit of 70,000 metric tons heavy metal (MTHM) for the Nation's first spent nuclear fuel (SNF) and high-level radioactive waste (HLW) geologic repository, which has been designated by the Congress and the President to be sited in Yucca Mountain in Nye County, Nevada. Under the NWPAct, this statutory limit on the amount of SNF and HLW to be disposed of at Yucca Mountain will remain in place until a second repository is in operation. The inventories of commercial and Federal Government SNF and HLW in the United States are projected to exceed 70,000 MTHM by 2010, therefore additional repository capacity is needed. The 70,000 MTHM statutory limit for the first repository is not based on any technical considerations related to Yucca Mountain, and studies indicate that the repository layout at Yucca Mountain can be expanded to accommodate three times, or more, the current statutory limit of 70,000 MTHM. This capacity would be sufficient for disposing of the SNF from the existing fleet of reactors, even if all of their licenses are extended to allow them to operate for 60 years. If the number of nuclear power plants grows, a second repository may ultimately be needed beyond expansion of Yucca Mountain. The Secretary of Energy recommends that, consistent with legislation that the Administration proposed in 2007, Congress act promptly to remove the statutory limit of 70,000 MTHM for the Yucca Mountain repository, thereby permitting a deferral of a decision regarding the need for a second repository. This deferral allows for the decision regarding a second repository to consider how much additional capacity is needed, whether or not recycling of SNF is appropriate and should be implemented, and what waste management approaches for the additional SNF may be most appropriate.

2. EXECUTIVE SUMMARY

The Nuclear Waste Policy Act of 1982, as amended (NWPAct), establishes a process for the siting, construction and operation of one or more national repositories for permanent disposal of the Nation's spent nuclear fuel (SNF) and high-level radioactive waste (HLW). In 1987, after the Department of Energy (the Department or DOE) had conducted studies of nine potential repository sites located throughout the United States, Congress amended the NWPAct and selected the Yucca Mountain site in Nye County, Nevada as the only site for further study for the first national repository. In 2002, Congress passed and the President signed Public Law 107-200, which approved Yucca Mountain as the site for that repository. On June 3, 2008, the

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Department submitted a license application to the Nuclear Regulatory Commission (NRC) seeking construction authorization for the repository at Yucca Mountain.

This report is prepared pursuant to Section 161 of the NWPAⁱ, which requires the Secretary of Energy (the Secretary) to report to the President and to the Congress on or after January 1, 2007, but not later than January 1, 2010, on the need for a second repository. In preparing this report, the Department has considered the relevant statutory provisions of the NWPA, the current and projected inventories of SNF and HLW, and the projected capacity of the proposed Yucca Mountain repository.

In particular, the Department has considered the provisions of the NWPA which currently set a statutory capacity limit on the amount of commercial and government-owned SNF and HLW that can be emplaced in the Nation's first repository to 70,000 metric tons of heavy metal (MTHM), until a second repository is in operation. Specifically, Section 114(d) of the NWPAⁱⁱ "prohibit[s] the emplacement in the first repository of a quantity of spent fuel containing in excess of 70,000 metric tons of heavy metal or a quantity of solidified high-level radioactive waste resulting from the reprocessing of such a quantity of spent fuel until such time as a second repository is in operation."

The Department has also considered President Reagan's decision in 1985, pursuant to Section 8 of the NWPA, to use the disposal capacity of the first repository for the disposal of HLW, including DOE and U.S. Navy SNF, resulting from national defense activities. Subsequent to President Reagan's decision, the Department established a policy to allocate ninety percent (90%) of the first repository capacity (in MTHM) to civilian SNF and ten percent (10%) of the repository capacity to Department-managed SNF and HLW. Accordingly, 63,000 MTHM of the 70,000 MTHM statutory limit is allocated to civilian waste and 7,000 MTHM of the 70,000 MTHM statutory limit is allocated to national defense waste.

The Department has considered that there is currently more than 58,000 MTHM of commercial SNF in storage in the United States, and the total inventory of commercial SNF continues to increase at a rate of about 2,000 MTHM per year. DOE expects that, by 2010, commercial nuclear power plants will have generated the entire amount of commercial SNF (that is, 63,000 MTHM) that is allocated for disposal in the Yucca Mountain repository under the current statutory cap. Assuming all existing operating nuclear reactors in the United States request license extensions from the NRC to operate for 60 years, the amount of commercial SNF from these reactors in the United States requiring permanent disposal is projected to be approximately 130,000 MTHM. Further, there is currently approximately 12,800 MTHM of DOE SNF and HLW, including naval SNF, in storage at government sites. This quantity exceeds the 7,000 MTHM of national defense waste allocated for disposal in the Yucca Mountain repository. Additionally, nuclear utilities have expressed their intention to file, by the end of 2010, license applications seeking approval for the construction and operation of 34 new nuclear reactors. If these reactors become operational, they would substantially increase the amount of nuclear generation and will result in additional spent nuclear fuel requiring disposal. **Unless Congress raises or eliminates the current statutory capacity limit of 70,000 MTHM in the NWPA, the Nation will need a second repository for SNF and HLW.**

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To address this need, the Department has further considered the following three alternatives and possible ways to move forward:

- (1) Remove the statutory limit of 70,000 MTHM for Yucca Mountain and dispose of currently projected quantities of SNF and HLW at the Yucca Mountain repository;
- (2) Begin the process of siting, designing, licensing and constructing a second repository as soon as possible so it will be ready to receive SNF and HLW by the time 70,000 MTHM has been emplaced in the Yucca Mountain repository; or,
- (3) Defer the decision and prolong the time commercial SNF generated after 2010 will be stored at reactor sites, as well as the time DOE SNF and HLW will be stored at DOE sites.

In addressing the first alternative of removing the statutory limit and placing more than 70,000 MTHM of SNF and HLW at Yucca Mountain, the Department has considered the additional area available for disposal at Yucca Mountain. The 70,000 MTHM statutory limit that Congress established in 1982 for the first repository is not based on any technical considerations related to Yucca Mountain. Studies indicate that three times, or more, this statutory limit could be accommodated by expanding the repository layout at Yucca Mountain.

In addressing the second alternative of developing a second repository, the Department has considered previous work performed to identify candidate repository sites. That work shows that all states in the contiguous United States have an identified potential site or area that could be considered for a second repository.

In considering the third alternative of deferring a decision, the Department has considered the impacts of leaving uncertain the disposal path for the commercial SNF and national defense waste in excess of the current 70,000 MTHM statutory limit. Each year a decision is deferred, the Federal Government will incur additional financial liabilities. In addition, deferral of a decision increases the possibility the Department will be unable to honor, in a full and timely manner, its commitments to states that currently store national defense HLW and SNF within their borders—including Washington, Idaho, and South Carolina, among others.

Finally, the Department has also considered legislative actions that would be needed to implement the alternatives. The first alternative would require removing the current statutory limit of 70,000 MTHM, as the Administration has proposed previously. The second alternative would require legislative action to specify the process for siting, design, licensing and constructing a second repository. The third alternative would require Congressional direction to the Department on how to address the damages resulting from the delay and on what to do with the HLW and SNF that could not be placed in Yucca Mountain.

As set forth more fully below, the Secretary recommends that the preferred course of action is legislative removal of the statutory capacity limit of 70,000 MTHM. Removal of this statutory limit would defer the urgency in evaluating the issues associated with a second repository.

3. HISTORY OF THE NWPA

When first enacted in 1982, the NWPA provided for the development by the Department of two geologic repositories. Specifically, the NWPA directed the Department to identify three candidate sites for the first repository and to conduct a multi-year evaluation of each of the sites. The site characterization process was to be repeated for a second set of sites for the second repository. The Department was directed to issue general guidelines for the program, which were finalized in December 1984 as General Guidelines for the Recommendation of Sites for Nuclear Waste Repositories (10 CFR Part 960). In addition, the NWPAⁱⁱⁱ established a statutory limit on the quantity of SNF that could be emplaced in the first repository until such time as a second repository is in operation. This statutory limit is 70,000 MTHM, or a comparable quantity of solidified HLW resulting from the reprocessing of such a quantity of SNF.

Through passage of the Nuclear Waste Policy Amendments Act of 1987 (the Amendments Act), Congress redirected the Department to focus its site characterization activities only at Yucca Mountain, Nevada. The Amendments Act also terminated site-specific activities at all candidate sites other than the Yucca Mountain site (i.e., the Deaf Smith County, Texas and Hanford, Washington sites). The Amendments Act also banned future site-specific activities with respect to a second repository unless and until Congress specifically authorizes and appropriates funds for such activities, and requires the Secretary to report to the President and to Congress on or after January 1, 2007, but not later than January 1, 2010, on the need for a second repository. The Amendments Act did not modify the statutory capacity limit of 70,000 MTHM for the first repository.

In 2002, in accordance with the framework established by the NWPA, as amended, the Secretary recommended the Yucca Mountain site to the President for development as a repository. The President accepted the Secretary's recommendation and submitted the recommendation to Congress. Subsequently, the Governor of Nevada submitted a Notice of Disapproval. Congress passed a joint resolution approving the Yucca Mountain site for development and the President signed the resolution into law (Public Law 107-200).

4. FUNDING FOR SNF AND HLW DISPOSAL ACTIVITIES

The NWPA authorizes the Secretary to enter into contracts with utilities for the acceptance and disposal of SNF. The terms for these contracts, which are known as the Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste (Standard Contract), are set forth in 10 CFR Part 961. The Department has executed contracts with individual utilities operating the nation's current fleet of nuclear power plants. The Standard Contract provides that, in return for the payment of fees, the Department will take title to and dispose of SNF covered by the contract as expeditiously as practicable following commencement of operation of a repository, beginning not later than January 31, 1998. The failure of DOE to begin acceptance of SNF under the contracts has been the subject of litigation between DOE and the utilities.

The Standard Contract also provides for the payment of fees into the Nuclear Waste Fund to fund activities associated with the disposal of civilian SNF. Those fees have to date been set at 1.0 mill (one-tenth of one cent) per kilowatt-hour, on the commercial generation of nuclear power by contract-holders. The Secretary must review the fee annually to determine its

adequacy, and propose adjustments, as needed, to ensure full cost recovery. In addition, costs associated with the disposal of DOE SNF and HLW are paid by appropriations of general revenue funds.

5. WASTE STREAM FOR DISPOSAL

The SNF and HLW planned for disposal in Yucca Mountain consists of two principal types: 1) commercial SNF generated by nuclear power reactors and 2) DOE SNF and HLW. The inventory of material at DOE sites is essentially fixed, and consists principally of DOE SNF resulting from government nuclear weapons programs, research reactors, reactor prototypes, and nuclear-powered naval vessels; and HLW created from reprocessing commercial and DOE SNF. Only the inventory of naval SNF, which is critical to the Nation's national security needs, continues to increase materially. The inventory of material at DOE sites is approximately 2,500 MTHM of DOE SNF and approximately 10,300 MTHM of DOE HLW, for a total of approximately 12,800 MTHM^{IV}. This exceeds the 7,000 MTHM portion of the 70,000 MTHM statutory limit for Yucca Mountain that is currently allocated to DOE SNF and HLW.

The commercial SNF inventory, which includes commercial SNF generated by 104 operating reactors and 14 reactors that have ceased operation, currently is approximately 58,000 MTHM and is increasing by approximately 2,000 MTHM annually. It is also possible to make reasonable projections of the total amount of spent fuel that will be generated by the existing fleet. The major variable in making projections concerning future generation of commercial SNF from the existing fleet is the issuance of 20-year operating license extensions to many reactors (for a possible total lifetime of 60 years). As of January 2007, 47 license extensions had been granted. Figure 1 shows the historical and projected commercial SNF inventory if all currently operating reactors operate to the end of their licensed lifetimes (note that currently, no reactor has operated even to the end of its initial 40 year license). Projections are shown for a case that assumes only 47 reactor-life extensions and a bounding case that assumes all 104 operating reactors receive life extensions. The 47 reactor-life extension projection is approximately 109,300 MTHM, and the 104 life extension projection is approximately 130,000 MTHM. It should be noted that, regardless of the number of life extensions assumed, the current 63,000 MTHM portion of the 70,000 MTHM statutory limit for Yucca Mountain that is allocated to commercial SNF will be exceeded by 2010.

The projections used in preparing this report do not include any commercial SNF from the future operation of possible new reactors. The projections used in this report also do not take into account the possible effects of any decision to proceed with any of the reprocessing options being considered as part of the Global Nuclear Energy Partnership (GNEP) initiative. The current 70,000 MTHM statutory limit as defined in the NWPA pertains to the heavy metal content of the original fuel. As a result, from a repository capacity standpoint, it does not matter if SNF is emplaced as the original spent fuel rods or the SNF is reprocessed and only the resulting HLW is emplaced. Only the waste forms that originate from 70,000 MTHM can be emplaced. In any event, all reprocessing technologies under consideration as part of the GNEP initiative would produce wastes requiring disposal in a repository and moreover, deployment of reprocessing technologies would have little, if any, effect on the quantity of DOE SNF and HLW as they are not likely candidates for reprocessing.

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It should be noted, however, that under a scenario where the number of future new nuclear plants grows substantially, the use of reprocessing technologies would extend the use of the Yucca Mountain repository, and if a second repository ultimately is necessary, would also prolong the use of that repository. Further, to the extent that reprocessing reduces or eliminates the need for retrievability of waste between the time it is emplaced in a repository and closure of that repository, this could result in increased operational efficiencies, lower costs for repository construction and operations, and open additional geologic media, such as salt formations, to consideration.

As far as the conclusions contained in this report are concerned, the projections of waste considered in this report are based on reasonable assumptions reflecting current policy, and speculation as to future policy has been limited to the extent practicable.

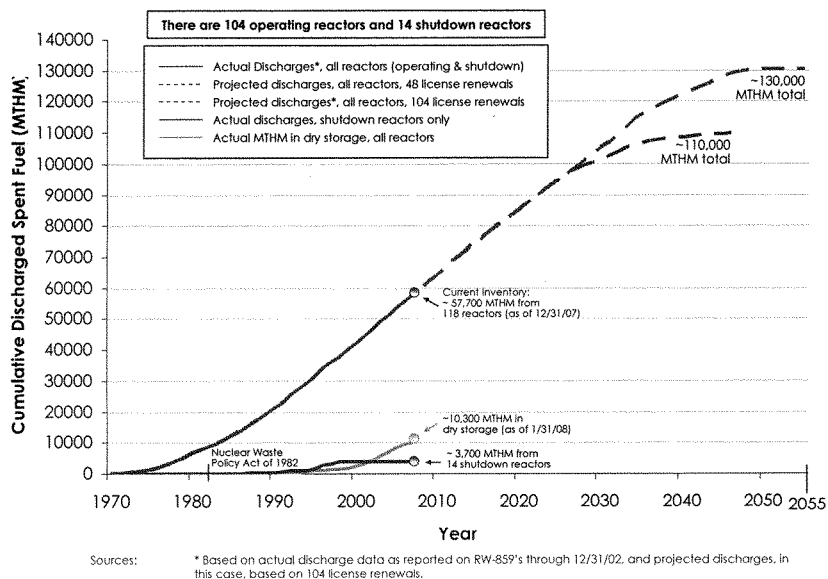


Figure 1. Historical and Projected Commercial SNF Generation Inventory from Existing Fleet (if all currently operating reactors operate to the end of their licensed lifetimes)

6. THREE ALTERNATIVES CONSIDERED

A repository at Yucca Mountain subject to the NWPA statutory capacity limit of 70,000 MTHM cannot accommodate the projected amount of 122,100 MTHM. The 63,000 MTHM allocation for commercial SNF within the 70,000 MTHM statutory capacity limit will be reached by SNF discharged by existing reactors by 2010, well before the Yucca Mountain repository begins operations. Accordingly, there is a need for additional repository capacity beyond the current statutory limit on the Yucca Mountain repository if the Department is to be able to carry out the mandate of the NWPA to provide for the disposal of defense and commercial SNF and HLW produced in the United States. If the statutory limit on the Yucca Mountain repository is not lifted, then a second repository will be needed.

The Department has considered three alternatives for addressing this need for disposal capacity beyond the 70,000 MTHM limit:

- Removing of the statutory limit of 70,000 MTHM for Yucca Mountain and disposal of currently projected quantities of SNF and HLW at the Yucca Mountain repository;
- Beginning the process of siting, designing, licensing and constructing a second repository as soon as possible so it will be ready to receive SNF and HLW by the time 70,000 MTHM has been emplaced in the Yucca Mountain repository; or
- Deferring the decision and prolonging the time commercial SNF generated after 2010 will be stored at reactor sites, as well as the time DOE SNF and HLW will be stored at DOE sites.

6.1 REMOVING THE STATUTORY LIMIT OF 70,000 MTHM FOR YUCCA MOUNTAIN

Lifting the statutory limit of 70,000 MTHM would provide a substantial increase in the capability of the Department to accept SNF and HLW for disposal without the need for a second repository. It would avoid the additional costs and timing uncertainties associated with an effort to site and develop a second repository.

The Yucca Mountain repository would likely have sufficient capacity to dispose of the entire defense waste inventory plus the commercial SNF expected to be produced by the existing fleet of nuclear power reactors. The conclusion that removing the 70,000 MTHM limit on the Yucca Mountain repository can meet the currently projected needs for additional disposal capacity is based on studies indicating that Yucca Mountain has the physical capability to allow disposal of a much larger inventory. The 70,000 MTHM statutory limit on capacity of the first repository until a second repository is in operation is not based on any technical considerations related to the characteristics of possible repository sites or geologic media.

The NWPA provides no limit on the amount of SNF and HLW disposed of in the first repository after a second repository begins operation.

The Physical Capacity of Yucca Mountain

The 70,000 MTHM limit on the amount of waste that can be placed in the first repository is a statutory capacity limit, and the limit only applies until a second repository is in operation. If that statutory limit was removed, the amount of waste that could be placed in a Yucca Mountain repository would be a function of design constraints that address the heat load that the waste would introduce in the rock mass and the volume of rock of sufficient quality to allow the design to meet the constraints. The heat load, which is a function of burn-up and age of the SNF, is dictated by which SNF is shipped to the repository (referred to as the waste stream), how the SNF is loaded in waste packages, whether the waste packages are aged prior to emplacement, and the spacing or sequencing of waste packages when emplaced. The length of ventilation time prior to repository closure is also a key parameter in determining the amount of waste that can be placed in a given volume of rock. The volume of rock is dictated by the geologic characteristics of the site.

The current repository layout encompasses 1,250 acres. Past studies examined design layouts that encompass as much as 4,200 acres; this is more than three times the area of the layout used to accommodate 70,000 MTHM.

As the design of the repository evolved, DOE undertook additional studies^v of potential expansion areas. Questions and comments related to both the capacity of Yucca Mountain and the types of waste that could be placed in a repository led the Department to evaluate the cumulative impacts for an inventory larger than the Proposed Action in the 2002 Final Environmental Impact Statement (Final EIS)^{vi} prepared at the time of Site Recommendation. The additional waste considered consisted of the remainder of the total projected inventory of commercial SNF, DOE SNF and DOE HLW.

The current repository layout encompasses 1,250 acres at a thermal load of approximately 55 to 60 MTHM/acre. Past studies have shown design layouts that encompass as much as 4,200 acres, which is more than three times the area of the layout currently used to accommodate 70,000 MTHM (Figure 2). Also, recent thermal loading studies^{vii} indicate that the allowable thermal load is greater than the 55 to 60 MTHM/acre value currently used. More importantly, those studies, which are based on extrapolation of data from the area that has been characterized in detail for the 70,000 MTHM inventory in the Yucca Mountain license application to NRC, indicate that significantly greater thermal loads can be accommodated by extending the time that the repository is open and ventilated prior to repository closure.

Taken together, those studies provide confidence that a repository at Yucca Mountain has the capacity to handle all of the DOE SNF and HLW and the projected inventory of commercial SNF assuming operating life extensions for all of the existing commercial nuclear power reactors.

An independent study^{viii} found similar results, concluding that the current statutory limit on Yucca Mountain disposal capacity is a small fraction of the actual available physical disposal capacity at the Yucca Mountain site. That study concluded that at least four times this statutory limit established by Congress could be emplaced at Yucca Mountain, and that, with additional site characterization, potentially as much as nine times the statutory limit could be emplaced.

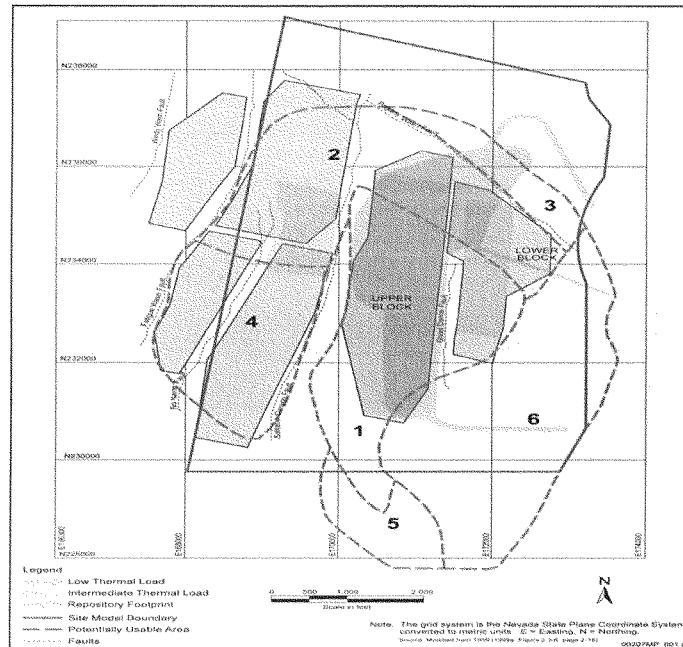


Figure 2. Potential Repository Emplacement Areas (after Mansure and Ortiz) ^{ix}

Total of potential emplacement areas is 9,500 acres. Also shown are current and past repository layouts and areas.

6.2 BEGINNING THE PROCESS OF SITING, DESIGNING, LICENSING, AND CONSTRUCTING A SECOND REPOSITORY AS SOON AS POSSIBLE

If the statutory limit of 70,000 MTHM is not modified, a second repository is needed. Due to specific limitations included in the NWSA,^x new authorizing legislation and specific appropriations would be needed before the Department could conduct any site-specific work on a second repository. In addition, specific authorization would be needed to construct a second repository since the NWSA authorizes only the first repository and limits use of the Nuclear Waste Fund to construction of facilities specifically authorized by law. Finally, the Amendments Act deleted the provisions relating to siting a second repository and amended the key provisions in Section 114 relating to site recommendation, National Environmental Policy Act requirements, and licensing to apply specifically to Yucca Mountain. These changes leave the process for siting and licensing a second repository undefined.

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The analysis in this report assumes a second repository would have to begin operation by 2041 in order to permit DOE to continue waste acceptance without disruption. This assumption is based on emplacing the 70,000 MTHM permitted by current law in Yucca Mountain by 2041. The schedule for the second repository assumes that the siting, designing, licensing, and construction process for the second repository would begin in 2011, allowing 28 years for the completion of that process. The 1987 Mission Plan Amendment, issued before the Amendments Act was passed, presented a schedule for siting and developing a second repository following a national site survey. The process was estimated to take about 28 years. That estimate was based on use of the second repository provisions of the NHPA of 1982, which specified the details of the siting and licensing process. That period may be considered optimistic, since the time between the start of the first repository siting process in 1983 and the earliest possible start of operations at Yucca Mountain in 2020 is 37 years.

In addition, the need for legislation before any site-specific work could be performed introduces substantial uncertainty into the schedule for a second repository. Opening the NHPA to reinstate a second repository program could reopen all of the issues about the siting process that took years of congressional effort to resolve prior to passage of the Act in 1982 – the role of host states, the number of sites to be characterized, criteria for guidelines, the site recommendation process, voluntary versus directed siting, and other matters. One approach would be simply to reinstate the deleted second repository provisions and add authorization for construction of a second repository. Even then, however, the elimination of parallel characterization of three sites for the first repository in 1987 suggests that the number of sites to be characterized for a second repository would need to be revisited.

Assuming the process must begin around 2011 to avoid a halt in receipts between the time Yucca Mountain reaches the statutory limit and the second repository is in operation, Congressional action to establish the siting process and provide the needed funding would be needed by 2010.

Siting a Second Repository

If the Congress chooses not to raise or eliminate the statutory cap on the disposal capacity at Yucca Mountain and instead chooses to authorize a second repository program, the most efficient path to identifying potential sites for a second repository would be to start with the other sites and areas that were under consideration for either the first or second repository before the Amendments Act was passed. The nine sites comprising the first Repository Screening Program were:

First Repository Sites	Geologic Media
Vacherie Dome, Louisiana	Dome salt
Cypress Creek Dome, Mississippi	Dome salt
Richton Dome, Mississippi	Dome salt
Yucca Mountain, Nevada	Tuff
Deaf Smith County, Texas	Bedded salt
Swisher County, Texas	Bedded salt
Davis Canyon, Utah	Bedded salt
Lavender Canyon, Utah	Bedded salt
Hanford Site, Washington	Basalt flows

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DOE reference documents^{xi} prepared in the same timeframe identify 17 states within which there were granitic bodies believed to be adequate for investigation for siting a repository for the second repository program. The states identified included:

Minnesota	Wisconsin
Michigan	Maine
New Hampshire	Vermont
Massachusetts	Connecticut
Pennsylvania	New York
New Jersey	Delaware
Maryland	Virginia
North Carolina	South Carolina
Georgia	

Supporting references^{xii, xiii} identify eight additional states under consideration by the crystalline rock program as having granitic bodies that could be adequate for investigation for siting a repository for the second repository program:

Washington
Idaho
Arizona
Wyoming
Texas
Alabama
South Dakota
Oklahoma

Therefore, from the original first and second repository programs a total of 31 states have been identified that have potential sites or areas that could be evaluated for their potential for a second repository. These states are illustrated on Figure 3.

In the 1987 Mission Plan Amendment released before passage of the Amendments Act, the Department described an alternative program for proceeding with a second repository that started the second repository program over again with a national site screening process that would expand the types of geologic media and number of geographical areas considered. Some work already existed at that time to provide a basis for such an alternative approach. For example, in order to increase the diversity of rock types under consideration by the geologic repository program, the Department had initiated the Sedimentary Rock Program (SERP) in 1984. The objective of this program was to evaluate five types of sedimentary rock (sandstone, shale, chalk, carbonate rocks, and anhydrite) to determine the potential for locating a geologic repository site in one of these rock types. In that evaluation,^{xiv} shales were found to be equal to, or better than, the other four rock types.^{xv} Hard or rocklike shales having the favorable characteristics leading to this conclusion occur extensively in the conterminous United States.

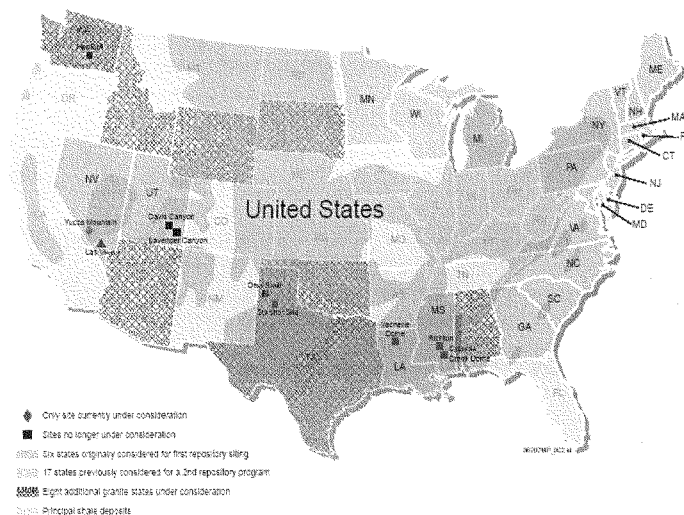


Figure 3. Map of the United States Illustrating First Repository Program Sites, Second Repository Program Areas Under Consideration, and Shale Deposits Potentially Suitable for a Repository

The outline of these shale deposits is overlain on Figure 3. This figure shows that, with the addition of states that have potentially suitable shale deposits, all states in the contiguous United States have a potential area that could be considered for the second repository.

6.3 DEFERRING THE DECISION

If the statutory limit of 70,000 MTHM is not modified, and the decision to build a second repository is deferred indefinitely, this would raise a number of significant issues. The Department has assessed the impacts of deferring such a decision. As a general matter, deferring this decision would prolong the time commercial SNF generated after 2010 will be stored at reactor sites, as well as the time DOE SNF and HLW will be stored at DOE sites. As noted previously, by 2010 the inventory of SNF generated by commercial nuclear power reactors will reach 63,000 MTHM which is the portion of the 70,000 MTHM statutory limit allocated to commercial SNF. Thus, if the current statutory cap remains in place, commercial SNF generated after 2010 cannot be emplaced in a repository until a second repository begins operation. Also, as noted previously, about half of the DOE SNF and HLW (approximately 5,800 MTHM) cannot be emplaced in a repository until a second repository begins operation.

With respect to commercial SNF, deferral of a decision would likely result in additional liabilities under the Standard Contracts. Under federal court decisions related to the Department's failure to begin accepting waste for disposal in 1998, as required by current law,

the Department has been found to be liable for certain damages attributable to the delay in SNF acceptance. In a 2002 decision, the 11th U.S. Circuit Court of Appeals held that the Department is not authorized to spend Nuclear Waste Fund monies on settlement agreements compensating the utilities for their onsite storage costs.^{xvi} Rather, damages are paid by federal taxpayers through the U.S. Treasury's Judgment Fund. DOE has estimated that the liability associated with the delay in waste acceptance, based upon the beginning of operations at Yucca Mountain in 2020, and continuing without interruption until all the spent nuclear fuel has been received, may be up to \$11 billion, and could increase significantly for each additional year operations are delayed or interrupted.

Deferring a decision on the second repository until a choice is made whether to pursue one of the reprocessing options currently under consideration does not affect the analysis concerning commercial SNF. As noted previously, application of the current 70,000 MTHM statutory limit is the same whether SNF is emplaced as the original spent fuel rods or the SNF is reprocessed and only the resulting HLW is emplaced. In addition, while reprocessing offers the potential to make the fuel cycle and disposal more efficient, there is no basis to speculate what, if any, volume of SNF generated before the deployment of reprocessing technology will be reprocessed. It is highly uncertain to what extent the economic and technical factors that would support the business case for reprocessing SNF as it is being generated would also support the reprocessing of legacy SNF.

Deferring action also increases uncertainties about final disposition of the DOE HLW and SNF that is not included in the 7,000 MTHM portion of the 70,000 MTHM statutory limit allocated to national defense waste. Lack of any knowledge about the characteristics of the site and repository design that might be used for disposal of this material complicates decisions about final waste solidification and other steps in preparation for disposal. Uncertainty about the timing of availability of the needed additional disposal capacity would also complicate planning for final cleanup and decommissioning of the sites and facilities where the material is now stored. Continued deferral of a decision to add that disposal capacity will add to the costs of management at the current sites, and could threaten the Department's ability to fulfill agreements with the states hosting those sites to remove the waste for permanent disposal.

7. POTENTIAL LEGISLATIVE ACTIONS

Legislative action is required for the first and second alternatives and most likely is required for the third alternative. Using the Yucca Mountain repository for all of the projected SNF and HLW would require elimination of the 70,000 MTHM statutory limit. The Administration already has proposed legislation to accomplish this objective. Deciding to proceed with a second repository also would require legislation to authorize the repository and to specify how the second repository would be sited and licensed. While deferring the decision on the second repository does not require legislation to implement, it most likely would produce results that would require Congressional actions, such as direction on how to deal with the failure to honor contracts concerning commercial SNF and commitments and agreements concerning DOE SNF and HLW.

8. CONCLUSIONS

This report concludes that considerably more than 70,000 MTHM of SNF and HLW will require disposal in a geologic repository. In fact, at this time there is more than 58,000 MTHM of commercial SNF in storage, increasing at a rate of about 2,000 MTHM per year, and approximately 12,800 MTHM of SNF and HLW in storage at government sites. The inventory of waste materials planned for disposal in Yucca Mountain, which includes 7,000 MTHM of DOE SNF and HLW in addition to the commercial SNF, will reach the 70,000 MTHM statutory capacity limit in 2010.

A repository at Yucca Mountain that remains subject to the current NWSA statutory capacity limit of 70,000 MTHM cannot accommodate all of the currently projected commercial and DOE and U.S. Navy SNF and HLW. If the statutory limit on the first repository is not lifted, then a second repository will be needed. However, studies indicate that three times the statutory limit of 70,000 MTHM, or possibly more, could be accommodated by expanding the repository layout at Yucca Mountain. Lifting the statutory limit on the disposal capacity at Yucca Mountain provides an opportunity to defer the need to reassess repository capacity requirements. During this deferral period the future growth of nuclear energy and impacts from nuclear fuel recycling will become more clear, enabling a more informed decision regarding the need for a second repository. Based on the above, the Secretary of Energy recommends that Congress act promptly to remove the statutory limit of 70,000 MTHM for the Yucca Mountain repository and defer a decision regarding the need for a second repository.

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Endnotes

- ⁱ Public Law 97-425, Jan.7, 1983, Section 161(b) [42 U.S.C.10172(b)]
- ⁱⁱ Public Law 97-425, Jan.7, 1983, Section 114(d) [42 U.S.C. 10134(d)]
- ⁱⁱⁱ Public Law 97-425, Jan.7, 1983, Section 114(d) [42 U.S.C. 10134(d)]
- ^{iv} Huizenga, D. 2001. "Integrated Acceptance Schedule for Department of Energy Spent Nuclear Fuel and High-Level Waste." Memorandum from D.G. Huizenga (U.S. DOE Office of Environmental Management [EM]) to L.H. Barrett (OCRWM). July 11, 2001. ACC: MOL.20010821.0087.
- ^v CRWMS M&O, 1995, Generic Subsurface Layouts for Various Repository Thermal Loadings. BC000000-01717-5705-00002, Rev. 00
- ^{vi} DOE 2002. Final Environment Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada. DOE/EIS-0250. Washington, D.C.: U.S. DOE Office of Civilian Radioactive Waste Management (OCRWM). ACC: MOL.20020524.0314 through MOL.20040524.0320
- ^{vii} DOE 2008. Postclosure Analysis of the Range of Design Thermal Loadings, concurrence review copy dated January 2008. ANL-NBS-00057 Rev. 00C.
- ^{viii} Electric Power Research Institute, 2006, Analysis of the Maximum Disposal Capacity for Commercial Spent Nuclear Fuel in a Yucca Mountain Repository, 1013523, Technical Update.
- ^{ix} Mansure, Arthur J., and Terri Smith Ortiz, 1984, Preliminary Evaluation Of The Surface Area Available For A Potential Nuclear Waste Repository At Yucca Mountain, Sandia Report, SAND84-0175.
- ^x Section 161 of the NWPA provides that the Secretary may not conduct site-specific activities with respect to a second repository unless Congress has specifically authorized and appropriated funds for such activities. 42 U.S.C. 10172a.
- ^{xi} DOE 1985. Mission Plan for the Civilian Radioactive Waste Management Program, Vol. I. DOE/RW-0005 Volume 1 of 3 volumes, p. 40 for six states originally considered for first repository siting, p. 42 for the 17 states considered for potential second repository crystalline (granite) sites.
- ^{xii} OCRD, 1983 A National Survey Of Crystalline Rocks And Recommendations Of Regions To Be Explored For High-Level Radioactive Waste Repository Sites Office of Crystalline Repository Development, OCRD-1 [Fig 17].
- ^{xiii} DOE, 1986. Draft Area Recommendation Report for the Crystalline Repository Project U.S. Department of Energy, Office of Civilian Radioactive Waste Management, Crystalline Repository Project Office, DOE/CH-15(0).
- ^{xiv} Croff, A. G., T. F. Lomenick, R. S. Lowrie, and S. H. Stow, 2003, Evaluation of Five Sedimentary Rocks Other than Salt for Geologic Repository Siting Purposes Volume 1: Main Report, Oak Ridge National Laboratory, ORNL/TM-2003/256/V1.
- ^{xv} Ibid. The report also includes the results of a survey of foreign activities concerning sedimentary rocks other than salt that disclosed that only shale-like rocks were being seriously considered. Shales and/or clays (along with granite) were the geologic media of choice in Belgium, Italy, and Japan. Shales and clays were considered to be alternatives in France, England, and Canada. Clays were also being considered in virtually every country for use as backfill material.
- ^{xvi} Office of Civilian Radioactive Waste Management Fiscal Year 2002 Annual Report to Congress, DOE/RW-0560, page 27.

Mr. JOHNSON. Mr. Chairman, DOE's July 22 response to Chairman Shimkus, I think, as you indicated, indicates that ongoing transportation activities are authorized under Section 180 of the Nuclear Waste Policy Act and eligible to be paid for from the Nuclear Waste Fund. However, Section 302 of the Nuclear Waste Policy Act regarding use of the Nuclear Waste Fund stipulates "no amount may be expended by the Secretary under this subtitle for the construction or expansion of any facility unless such construction or expansion is expressly authorized by this or subsequent legislation. The Secretary is hereby authorized to construct one repository and one test-and-evaluation facility." Which, of course, as we know, is Yucca Mountain. So my question is how does the Department justify Nuclear Waste Fund expenditures on transportation for destinations other than Yucca Mountain?

Mr. MONIZ. Well, sir, first of all, I am not a lawyer and I think I may have to get back to you for the recommendation.

Mr. JOHNSON. Neither am I so—

Mr. MONIZ. OK. We talk the same language.

Mr. JOHNSON. We do.

Mr. MONIZ. But I think again all of the entries in those three tables that was sent were reviewed by general counsel at DOE. Secondly, I would note that it was my understanding those transportation studies were very generic. They would be applicable anywhere, and they certainly are not applied to the construction or expansion of any facility. So I can check on that with the lawyers but that would be my first reaction.

Mr. JOHNSON. Yes, I would ask you to go back and check, Mr. Secretary—

Mr. MONIZ. OK.

Mr. JOHNSON [continuing]. Because as I understand Section 302, it seems pretty emphatic and pretty specific what the shalls and the shall nots pertain to.

Mr. MONIZ. OK.

Mr. JOHNSON. OK. With that, Mr. Chairman, I yield back.

Mr. SHIMKUS. The gentleman yields back the time.

The chair now recognizes the gentleman from California, Mr. McNerney, for 5 minutes.

Mr. MCNERNEY. Thank you, Mr. Chairman.

Mr. Secretary, first, I want to thank you for bringing your technical expertise and your human communication skills to this difficult problem.

My first question would be do you believe in your opinion that the technology exists for safe transportation and long-term storage of high-level nuclear waste?

Mr. MONIZ. In the National Academy study that I referred to earlier certainly concluded that one has to execute but, yes, that it could be safe.

Mr. MCNERNEY. So what you have said is that we need both the science and we need the public acceptance for a local—so clearly, in Yucca Mountain, the public acceptance part of this has failed. Would you be a critic and tell me what you think went wrong in that process in getting that project to be acceptable in Nevada at Yucca Mountain?

Mr. MONIZ. Well, I am neither a lawyer nor a psychologist but I think, as was said earlier, I think the very prescriptive nature and frankly the change of process that led to the singling out of Yucca Mountain I think just inherently raised some opposition.

Mr. MCNERNEY. Do you think that that can be repaired, the damage that was done?

Mr. MONIZ. Well, we feel that consent-based process has a very good chance of being successful with the time taken to communicate, cooperate, and assist in technical analysis.

Mr. MCNERNEY. But at the very least, the Department has learned from that experience and probably won't make those same mistakes again?

Mr. MONIZ. I think we have all learned a hard lesson, yes.

Mr. MCNERNEY. Thank you. I have another question. Do you believe that high-level waste has enough potential future value to design repositories that the waste could be retrieved in the future if appropriate?

Mr. MONIZ. Well, if I may just kind of make sure we have our definitions in the same line, we are using high-level waste generally to apply to things like the defense waste where the things like plutonium have already been removed so they do not have energy value. But in the spent fuel or used fuel, as it is sometimes called from the commercial power reactors, they still contain plutonium, which certainly could be used for power production here and that is what is done in France, for example. I want to make very clear I am not advocating that, but technically, that is correct.

Retrievability, however, independent of that, is probably something that will be important for public acceptance, at least over some time period.

Mr. MCNERNEY. Well, if you look at what is happening at the NIF program in Livermore, in order to use the NIF as a gateway to hybrid fusion reaction or commercial reactor, they would use spent fuel and use neutrons created in little fusion explosions to accelerate a heat-driven process. Do you know what I am talking about?

Mr. MONIZ. Yes, there are many—

Mr. MCNERNEY. There are values in this material.

Mr. MONIZ. Yes, there are many alternatives. You are referring to a process called spallation typically—

Mr. MCNERNEY. I didn't know the word.

Mr. MONIZ [continuing]. To make—well, to make neutrons and that you then do something else with. There is fusion, there is conventional fusion, there is inertial-confined fusion. These are all, shall we say, well into the future as possible energy sources but they are being researched.

Another thing I just maybe mention is that there is a concept that is interesting potentially which one uses fusion for the purpose of making neutrons that then makes more nuclear fuel—

Mr. MCNERNEY. Right.

Mr. MONIZ [continuing]. Using depleted fuel, and I think that is the thing that you are probably referring to.

Mr. MCNERNEY. So the other question I have has to do with the concern about comingling of military versus civilian nuclear waste.

What is the issue there? I don't understand why that is a concern or an issue.

Mr. MONIZ. Oh, well, in the 1980s that decision was made to combine them. That wasn't made in the context of the 1998 date, and so it was viewed that the defense programs could then be relieved of the need to independently develop a repository. Well, now, it is a different world. 1998 is past as far as I can recall. Also, since then, we have developed specific agreements with States like Idaho, for example, in terms of removal of not only spent fuel but of high-level waste.

And so the Blue Ribbon Commission was not saying that technically one could not combine them but it does note that there are very different issues, different agreements. Also, the high-level waste for the defense waste so-called, as I said earlier, does not have energy value. Number two, it has different packaging. Number three, it typically was very low burn-up fuel. So it is typically much cooler than commercial waste and so, there is no judgment made, but we are going to reopen that, relook at the decision, and see if it would make more sense to keep them separate or keep them on the same track.

Mr. MCNERNEY. Thank you.

Mr. SHIMKUS. The gentleman's time is expired. I would ask him to talk to me about Hanford on background. We can talk about it.

The chair now recognizes the gentleman from Ohio, Mr. Latta, for 5 minutes.

Mr. LATTI. Thank you very much, Mr. Chairman. And, Mr. Secretary, again thank you very much for being with us this afternoon.

And if I could go back to Chairman Shimkus' June 28 letter that he had written to the Department of Energy, the chairman raised questions about the legal authority under which DOE is conducting the various nuclear waste activities. It looks to me that DOE is picking and choosing which laws are convenient to follow. In the nuclear fuel storage and transportation section of DOE's response, I noticed that DOE sites the Nuclear Waste Policy Act Monitored Retrieval Storage, the MRS, provisions as the authority for pursuing interim storage activities. However, DOE's 2008 report to Congress on the demonstration of the interim storage of spent nuclear fuel from decommissioned nuclear power reactor sites state, "in Section 141 of the NWPA authorized the Department to site, construct, and operate a Monitored Retrievable Storage, MRS, facility but restricted the ability of the Department to pursue this option by linking any activity under the section to milestones tied to progress in the development of the Yucca Mountain repository."

I guess the question I have is, given that the DOE has shut down the Yucca mountain program, how can DOE justify its activities on interim storage under the MRS provision? It is kind of a long question.

Mr. MONIZ. Well, again, sir, ultimately I am relying on the judgment of our general counsel in the Department of Justice and the spelling out the authorities that were in there. And I am also happy to respond more fully upon further research there. But again, in my view, the issues of researching for the whole back end of the fuel cycle, no matter what we pursue in terms of storage and repository program, we need to do that work that frankly was sus-

pended for so long because of the 1987 decision. But I will get a response——

Mr. LATTA. If I could ask if you could respond to the committee in writing on that, I would greatly appreciate it——

Mr. MONIZ. Yes.

Mr. LATTA [continuing]. Because I think it is very important point out there that needs to be——

Mr. MONIZ. I would be happy to.

Mr. LATTA [continuing]. Considered and responded to.

Now, if I could follow up on another point in regard to the chairman's letter, DOE also indicated that the used fuel research and development activities are authorized under the Atomic Energy Act of 1954. And it is clear, however, that in the Nuclear Waste Policy Act and amendments enacted into the 1987 law, Congress directed DOE not to conduct further repository research on sites other than Yucca Mountain.

In its decision in the *United States v. Estate of Romani*, the United States Supreme Court stated, "a specific policy embodied in a later statute should control our construction of the earlier statute even though it has not been expressly amended." And then the question I have then, Mr. Secretary, is how do you and the DOE justify ignoring the sections of the Nuclear Waste Policy Act while claiming to follow the others and then falling back to the Atomic Energy Act which so clearly has been superseded by the Nuclear Waste Policy Act?

Mr. MONIZ. Again, sir, I will include that in the detailed response because I am just not the person——

Mr. LATTA. Well, and again, you know, in reading your testimony, you know, I think it is very important because especially as we have known that we are looking at about \$15 billion have been spent at Yucca and, you know, I think if I remember right in your testimony, we are talking that it is looking like maybe another \$19 billion is going to have to be expended because of having to find other places to deposit the nuclear waste. So if I am reading that correctly, is that 15 billion and then another 19 billion on top of that?

Mr. MONIZ. Certainly north of 10, that is for sure.

Mr. LATTA. So we are talking \$34 billion out there that is going to be expended when we already had a site Yucca, is that correct?

Mr. MONIZ. Well, again, going back to the waste fee adequacy analysis, it is consistent that a mill per kilowatt hour would cover all of these costs. So it is essentially nuclear power, you know, pay-as-you-go. And I think the exact cost will become sharper only as the future trajectory becomes more clear. But the one mill per kilowatt hour in the revised assessment is certainly consistent with covering the costs.

Mr. LATTA. Mr. Chairman, if I could ask for indulgence to ask one more question?

Mr. SHIMKUS. It depends on how long.

Mr. LATTA. Short.

Mr. SHIMKUS. I have got colleagues who would like to ask——

Mr. LATTA. When you say when it becomes sharper in looking at that, could I just ask what your definition of sharper when it comes to—you said when those numbers become sharper?

Mr. MONIZ. First of all, the trajectory of nuclear power, which clearly is an unknown today, will it grow substantially? Will it not? Are we going to have multiple repositories? Are going to have multiple storage sites and repositories at the same time? I think those are all the issues that that will have to be resolved to get the full lifecycle cost understood.

Mr. SHIMKUS. The gentleman's time is expired. The chair now recognizes—

Mr. LATTA. I yield back. Thank you very much.

Mr. SHIMKUS [continuing]. The gentleman from Georgia. Your time is expired, no time to yield back.

The chair recognizes the gentleman from Georgia, Mr. Barrow, for 5 minutes.

Mr. BARROW. Thank you, Mr. Chairman.

Mr. Secretary, thank you for joining us today. And I can't help but feel like you have been put in an incredibly difficult position. You didn't really get us here but it is good to have a friend in nuclear in your position even though you have got an impossible set of circumstances to deal with. I just want to ask you, explain it so an old county commissioner can understand it. What is it going to take, what is going to have to happen, and who is going to have to do what before we decide whether to go forward with Yucca or not?

Mr. MONIZ. Well, I think the initial issue will be the results of the current litigation with the NRC.

Mr. BARROW. That has got to be decided.

Mr. MONIZ. That has to be decided and, as we have said, we will—

Mr. BARROW. And you need some legislative authority to do anything different than what is being litigated in the lawsuit right now.

Mr. MONIZ. Again, we feel we should be pursuing these dual tracks in any event and that will require new authorities. Should the licensing go forward, the evaluation go forward at the NRC, again, a caution that there are still many, many other steps that need to be taken by the Congress and the State to move that project forward.

Mr. BARROW. So what should those steps look like to mark what should we be doing?

Mr. MONIZ. Well, the first thing that I am really asking for and the administration asks for us to have the authorities to move forward on this parallel track.

Mr. BARROW. Here is a concern I have got with that because I am representing a whole lot of taxpayers who gave their consent to this overall structure when they have been paying their utility bills and paying into a fund that was supposed to get them something. I remember it was the generators who gave their consent to this process when they gave their political assent to the laws that impose this burden on them and they also entered into these contracts. When they turn all this ratepayer money over to you all, they were supposed to get something in return.

Now, my point is you talk about this is a pay-as-you-go system. We have been going pretty far down the road and we haven't gotten anywhere yet. So one question I would ask along those lines

what do we do to reimburse those folks who paid a sum if we decide to abandon Yucca? What do we do to the ratepayers and the generators that extracted the money for that solution? What is going to happen to those ratepayers? How are they going to be made whole if we decide to go in another direction?

Mr. MONIZ. The one mill per kilowatt hour is to remove fuel from those sites, put it into Federal control where then the Federal Government has the responsibility——

Mr. BARROW. That is for money that hasn't been collected yet.

Mr. MONIZ. But I am saying——

Mr. BARROW. What about the money that has already been collected?

Mr. MONIZ. And, yes, sure, but the——

Mr. BARROW. You say sure, but. It is——

Mr. MONIZ. Each kilowatt hour will ultimately bear a cost which is currently best estimate of a mill to manage disposal. There is no backing away from the Federal commitment to manage that process.

Mr. BARROW. My question: What about the stranded asset of the investment that ratepayers have paid for years now if it is determined that that asset is going to be upended? How about covering their loss?

Mr. MONIZ. The Federal Government, the administration remains committed to moving that fuel as soon as possible. That is why we believe that this dual track strategy is the fastest way——

Mr. BARROW. But if you move it to someplace other than what has been bought and paid for, you are going to add the cost of this other repository system, either this intermediate and permanent or this new permanent. My point is how do we compensate the folks who have paid for the facility that we are going to be walking away from if that is what we decide to do?

Mr. MONIZ. The estimate remains that the one mill per kilowatt hour is a very credible expectation for the cost of getting that fuel accepted and moved.

Mr. BARROW. That is future revenues for future projects. I am talking about what you want to do about the issue——

Mr. MONIZ. All the way from the beginning, the current waste fund with its nearly \$30 billion sitting in there——

Mr. BARROW. How about money that has been collected that hasn't been spent yet? What are we going to do about that?

Mr. MONIZ. Well, I mean currently it is collecting interest and it is sitting there to be deployed. In fact, then the request for legislation would be to determine how a new waste organization has access to whatever combination of discretionary and mandatory funds required. But that \$30 billion or almost \$30 billion is there for this purpose.

Mr. BARROW. Well, I can speak for every county commissioner and city councilman who has got any zoning authority anywhere in the country that there is a problem here that I recognize a mile away, and again, you didn't invent this problem, but if you have got to zone a socially necessary use into an area that has got some controversy or some undesirable effects, you are going to have some problems with folks who don't want it in their back yard.

And the problem with a consent-based basis that we are talking about here, one challenge that I see just as an old county commissioner is you have got folks who have got different ideas about what their back yard is. You might have a local government, the local community that is just dying to get the jobs and the infrastructure and the opportunities. You have got a State government that doesn't want it in their back yard. Or you might have a State government that wants it but a local government that doesn't want it in their back yard. Or you might have the State and local government on the same page and you have got some interest group somewhere that says it regards the whole country is their back yard or the planet as their back yard.

So I don't want us to be looking to something that has never been found and it won't be found. I don't want to be looking for a unicorn in this picture. Thank you for your—

Mr. SHIMKUS. I thank my colleague from Georgia and I would like to yield 5 minutes to the gentleman from Pennsylvania, Mr. Murphy, for 5 minutes.

Mr. MURPHY. Mr. Secretary, great to see you again, and thanks for coming to Pittsburgh this week.

Mr. MONIZ. Thank you.

Mr. MURPHY. One of the comments that was made in that roundtable you had was an energy company leader said it was important to have regulations that were science-based and enforced consistently so that they could predict our future. I worry about a consent-based approach because I am not always sure that it is based in science. I believe that pure science is best done without politics, and unfortunately, politics is often done without science.

And we had some hearings prior to today where we learned the story of what happened when a new director of NRC came in, basically shut down the facility, got rid of employees, disposed of records, and sent us back in time. And it concerns me that that was politically driven and not scientifically driven.

Now, help us, as I appreciate your commitment to wanting to move forward in this, but in March, Nye County, California, last year they notified DOE of their consent to have repository Yucca Mountain. DOE responded saying that Nevada doesn't consent. And, Mr. Secretary, your testimony refers to reports that a number of communities are exploring the possibility of hosting a consolidated storage facility and NRC staff has indicated four industries have expressed some level of interest. Has DOE or the representatives met with these entities? Can you give me a yes or no on that?

Mr. MONIZ. No, we are not and we don't have the authorities to begin any kind of a negotiation with these communities.

Mr. MURPHY. So isn't it fair that DOE meet with representatives from Nye County, Pennsylvania, or somewhere else if you are going to use a consent-based approach?

Mr. MONIZ. Oh, I am sorry. I believe some other officials have met with people from Nye County—

Mr. MURPHY. But people within DOE are not?

Mr. MONIZ. I am sorry?

Mr. MURPHY. But people from DOE are not meeting with folks in these other communities?

Mr. MONIZ. No, no, again, it is my understanding—I can clarify this later. It is my understanding that certainly some members of the Nuclear Energy Office have had discussions but nothing that I would call certainly a negotiation. We have no authorities to do that.

Mr. MURPHY. Well, regarding the interested entities, these four that were mentioned, have the Senators and Governors in the States where they are located endorsed hosting a consolidated interim storage facility?

Mr. MONIZ. No, sir, as far as my knowledge goes. But earlier, as Mr. Barton said, there is an example where a county in Texas has a public resolution—

Mr. MURPHY. Sure.

Mr. MONIZ [continuing]. Of interest and he said are engaged in discussions with the Governor and the State legislature. So that is an example where it is beginning and that is all—I think until we have a process in place—

Mr. MURPHY. Well, let me ask about this process. Have you done any analysis on the adequacy of the Nuclear Waste Fund to pay for both interim storage and final disposal facilities assuming the fund could be used for both purposes?

Mr. MONIZ. Again, the waste adequacy assessment looks at multiple scenarios and finds that there is a very, very wide range of lifecycle costs. The one mill per kilowatt hour—

Mr. MURPHY. But my point is, are you using the Nuclear Waste Fund to pay for interim and final disposal facilities?

Mr. MONIZ. That is again something that will have to be decided in Congress.

Mr. MURPHY. But is that something you would support?

Mr. MONIZ. The Blue Ribbon Commission supported it.

Mr. MURPHY. OK. And most of DOE's current nuclear waste management activities rely on taxpayer-funded appropriations in 2012 and under the Continuing Resolution 2013. This means that taxpayers are currently funding the costs of DOE's efforts to start over, breaking the historic principle that the beneficiaries of electricity, the consumers, pay the cost of disposal. So for how long and for what cost does the administration support continuing the policy of having the taxpayers foot the bill? Is that part of your discussion?

Mr. MONIZ. Again, that is a very important part of Congress' discussion in terms of how it has chosen to do appropriations, discretionary appropriations or waste fund allocations.

Mr. MURPHY. Sure. Well, in that context, though, our concern is we have already spent 15 billion that we appropriated and then someone, for consent reasons or political reasons, decided to pull the plug on that. So our concern is if we put more money into this, we want to know there is a commitment from you and the Department of Energy to move forward.

I was impressed with the article you wrote in Foreign Affairs 2011 where you talk about the importance of nuclear power and you also acknowledge the sensitivity you have to the Government paying billions of dollars in damages to energy companies and that the uncertainty of cost is a big problem with building more nuclear power plants. So in this context, you see the uncertainty of cost re-

mains if we are ambiguous of where we are moving forward. So your commitment to move forward is so important.

You mentioned the Blue Ribbon Commission with regard to moving forward, and you also said that we are in a stalemate and we have to be moving the ball forward. You said that today. So help this committee understand or build confidence in DOE's commitment to move forward on using Yucca Mountain as a permanent storage facility or, and what you have also talked about, a temporary one made for the next 100 years. There is land out there to do that as well. Are you committed to continue to move forward personally on this? Is the Department? Or are we going to see more holdups in this process?

Mr. MONIZ. Certainly I am committed. In fact, that is why I am here today. The administration is committed. The Department is committed. Of course, there is this recommendation about a new organization to be formed, and if that is done, then presumably a lot of those responsibilities would move to this new organization. But I think the point is the administration and the Government must be committed to executing this responsibility.

Mr. MURPHY. Well, we have been committed to a plan so far and it is frustrating to have the rug pulled out from under us. Thank you.

Mr. SHIMKUS. The gentleman's time is expired.

The chair now recognizes the gentlelady from California, Ms. Matsui, for 5 minutes.

Ms. MATSUI. Thank you, Mr. Chairman, and thank you for holding a hearing on this important issue. And thank you, Mr. Secretary, for joining us once again. I commend your work with the Blue Ribbon Commission and I appreciate the Department of Energy's continued work on this matter.

The administration's strategy for the management and disposal of used nuclear fuel and high-level radioactive waste makes significant contributions to this debate and I look forward to continuing this open dialogue with you on how best to address the safe deposit of our country's nuclear waste.

My district of Sacramento, the Sacramento Municipal Utility District, otherwise known as SMUD, owns the decommissioned Rancho Seco nuclear power plant, so I have had an interest in issues with spent fuel management posed by permanently shutdown reactors for some time. I was heartened to see that the administration's strategy includes a pilot interim storage facility with an initial focus on moving fuel from shutdown reactors. Shutdown reactors represent a unique component in overall nuclear waste policy. As is the case with SMUD, removal of the spent fuel is many times the last major hurdle in the way of putting the land to a more beneficial use.

The Blue Ribbon Commission and the administration both advocate that it should be a priority to move spent fuel from sites with permanently shutdown reactors and without an operating nuclear generating station. Do you agree that spent fuel from these sites should be prioritized?

Mr. MONIZ. That is certainly the administration's strategy's position.

Ms. MATSUI. I strongly support a pilot interim storage facility that removes all spent fuel from permanently shutdown sites. It seems to me that a successful pilot project could help repair public confidence in the Government's ability to manage the Nation's public waste.

Mr. MONIZ. Yes.

Ms. MATSUI. And what other benefits would a pilot project achieve?

Mr. MONIZ. Well, again, first and foremost, it would of course remove the fuel from those sites. I think it would have, as you have indicated, an enormous impact on saying that there is this commitment to accepting fuel by the Federal Government. We are accepting fuel. We are moving fuel. We are moving it safely and I think that would really add a big jolt of confidence to getting this whole program moving, not talking about it, but moving, moving fuel. That is the issue.

Ms. MATSUI. Now, in your testimony, you mentioned that DOE would conduct an analysis of initial used fuel shipments from shutdown reactors sites. Can you elaborate on what specific aspects this analysis will consider?

Mr. MONIZ. Well, I think the analysis at this stage, it has to be quite generic because of course what the geography would be of such a pilot facility will determine specific travel routes, et cetera, but I would say—and this is now my own personal speculation if you would like—I think for a first pilot facility in terms of modal issues, we probably will be talking, you know, trucking of casks on the highway. As the Academy report many years ago suggested, once we get into a very, very large-scale transportation of thousands of tons per year, then using trains as a major mode will be important.

Ms. MATSUI. So it is my understanding that the Federal Government has been transporting this nuclear waste and spent nuclear fuel in this country for some time now?

Mr. MONIZ. Um-hum.

Ms. MATSUI. That is right?

Mr. MONIZ. Yes, we have had thousands of shipments.

Ms. MATSUI. Yes. So can you tell us about that record and whether you are satisfied with the level of safety that has been achieved?

Mr. MONIZ. Certainly my understanding is that there has been a very, very safe record, and as I said, the similar record in Europe where more than 10 times as many movements have occurred has also been very good, at least that was the case a few years ago when I was on that Academy committee. To be honest, I haven't looked personally in the last 5 or 6 years.

Ms. MATSUI. OK. Well, I believe moving spent nuclear fuel from decommissioned sites first should be a priority and that a pilot interim storage facility is a necessary step in the right direction in the overall management of our Nation's nuclear waste. And I do look forward to working with you, Mr. Secretary, and my colleagues on this committee to make real progress in this area. And I thank you very much—

Mr. SHIMKUS. Can I have your last 35 seconds?

Ms. MATSUI. Yes, you may.

Mr. SHIMKUS. Mr. Secretary, what is a crystalline formation, cutting the rock?

Mr. MONIZ. Granite, for example.

Mr. SHIMKUS. And wasn't that exempted under the '87 amendments to the Nuclear Waste Policy Act?

Mr. MONIZ. As I recall, I believe that—

Mr. SHIMKUS. And there are 25 States that have this formation?

Mr. MONIZ. I don't—

Mr. SHIMKUS. So if we go to obviously a second repository, those sites, based upon your testimony, or those States would still be then open and accessible for granite formations during high-level nuclear waste? Wouldn't that be correct?

Mr. MONIZ. Well, I think again that would be—

Mr. SHIMKUS. States like Washington, Massachusetts, New Hampshire, Vermont, New York, Connecticut, Delaware, Maryland, and Virginia all could be considered—

Mr. MONIZ. I mean, again, as has been demonstrated internationally, there is a wide range of geologies that can be suitable for a repository.

Mr. SHIMKUS. Thank you, Mr. Secretary.

I now recognize the gentleman from West Virginia, Mr. McKinley, for 5 minutes.

Mr. MCKINLEY. Thank you, Mr. Chairman. And, Mr. Secretary, thank you for going to Morgantown to visit the—

Mr. MONIZ. It was fun.

Mr. MCKINLEY [continuing]. National Energy Technology Laboratory.

I wasn't here in Congress in '08 or '09. I didn't come until '11 so I am trying to get up to speed with all of this debate that is taking place, but I do have a fact finding from the Nuclear Energy Institute that indicates that in 2008 there were some 3,000 scientists across five laboratories and various major universities were involved in filing this application with the DOE for the permit. And then within a year's time, that permit was reversed. The application was reversed. Mr. Secretary, other than an election being taken place during that period of time, what happened? Was there a change in science or technology that DOE hadn't taken into consideration or was this decision to cancel the application merely political?

Mr. MONIZ. Well, in a similar vein, of course I was not here as well. However, I would note that, as we have stressed, that there are two essential conditions in our view. I mean one is good science and number two is consent.

Mr. MCKINLEY. Well, Mr. Secretary, what I am saying is what science changed between '08 and '09?

Mr. MONIZ. And there are two issues, science and consent, and the administration felt that on the consent basis this was simply not a workable project.

Mr. MCKINLEY. Was consent part of the law in '08?

Mr. MONIZ. It is a question of the ground truth, and the reality is the project moving forward? Does the project have the ability to capture all of the permits that it needs, which includes State permits? And so the project was deemed and declared not workable.

Mr. MCKINLEY. Engineers or contractors, it feels political. It doesn't feel like it has anything to do with science or technology. So the question you were asked several times now, the gentleman from Georgia was asking it; I heard Chairman Upton from Michigan raise the same question and using his numbers because I don't know what they are for West Virginia, but when he said Michigan again has taken away from the taxpayers and businesses, everyone using the power, they have extracted \$600 million from the residents of Michigan to pay for this facility. What have they gotten for that \$600 million?

Mr. MONIZ. Well, first of all, the question—

Mr. MCKINLEY. And I heard your answer, well, the amount that is being extracted is fair. It will pay for the facility, but that is not the question they we are asking. What did we get for it? If we wind up ultimately abandoning the facility, what did they get for \$600 million in Michigan?

Mr. MONIZ. The one mill per kilowatt hour has been paid in the rate base for all nuclear utilities for the Federal Government commitment to accept the fuel and move it from those sites. That commitment remains.

Mr. MCKINLEY. But they have spent 600 million and it hasn't happened yet, so what happens with the amount of money that has already been expended? Are we going to refund it to the individuals if we abandon and go to a different site?

Mr. MONIZ. As I think—

Mr. MCKINLEY. Because I believe you are trying to answer—if I can put words into your mouth—that whenever the site is determined, that mill per kilowatt hour will be adequate to be able to facilitate this, but that is not the question. The question is what happens to the \$600 million in Michigan that has already been expended? They don't have anything. There is nothing to show for it.

Mr. MONIZ. Again, the one mill per kilowatt hour is not to buy a facility. It is to buy a service. The service, as far as the utility concerned, is spent fuel removal. The failure to begin removing that fuel on February 1, 1998, has led to the payment of damages. Those damages are currently projected to go north of \$20 billion back to the utilities because the service is not being provided. The service will be provided. That remains the commitment. And the funds in the meantime are, as I said earlier, accruing interest. In fact, I think in the current waste fund—I maybe not quite right on this—but I think something like \$6 billion of it is interest that has accrued over the time. So it is a service being purchased. There was a decision a long time ago by this Congress in terms of how nuclear waste disposal would be paid for. The commitment remains. It is no different.

Mr. MCKINLEY. In closing, I know my time is almost up. Are you telling me that if this decision goes in our favor or it goes in the favor of Yucca Mountain, all of the investment we have made, will the President uphold that or is this going to be another DOMA, Immigration, and the Employer Mandate? Will he enforce this or would he waive this—

Mr. MONIZ. We have made very clear we follow the law. If the court directs—

Mr. MCKINLEY. He hasn't followed the law. That is the problem. He hasn't followed the law in other—

Mr. MONIZ. The law will be determined by this court decision that we are all awaiting, and if it directs the NRC to pick up the license, we will do our job to support that, given appropriations. It will be up to the funds to be supplied from discretionary or mandatory by this body and there will be many other conditions that have to be met, including by the Government, land withdrawals, there will be State permits, many, many issues. And again the judgment remains. When we put all of this together, it doesn't seem very workable.

Mr. MCKINLEY. Mr. Chairman, I apologize for running over.

Mr. SHIMKUS. No, you did fine. Thank you. The gentleman yields back his time.

And, Secretary, you have been great. We have got one more member here who is actually the chairman of the Energy and Air Quality Committee, so he does have part of the big nuclear portfolio up here and I am glad that he stayed around. And I would like to recognize him for 5 minutes.

Mr. MONIZ. I am aware of his portfolio.

Mr. WHITFIELD. Well, thank you, Chairman Shimkus.

Mr. Secretary, we appreciate your being with us today and I just have to say honestly that I don't envy you trying to defend the administration on this issue.

I was reading the testimony and it said "the administration supports working with Congress to develop the consent-based process that is transparent, adaptive, and technically sound." And it is my argument that we already have the law on the books, the Nuclear Waste Policy Act, 1982, 1987. Democrats and Republicans made the decision to do it. And now this administration in 2009 made the decision to pull the plug after the Department of Energy had submitted its application in 2008 at the NRC.

And then Mr. Jaczko, who—so in my view, Harry Reid, President Barack Obama, and the chairman of the Nuclear Regulatory Commission basically made the decision they don't care what the Congress thinks, they don't care what the American people think, they are not going to abide by the Nuclear Waste Policy Act. And, as a result, we have spent—I have heard different figures—Mr. Barton said around 15 billion, 13 billion, 14 billion for Yucca Mountain and no one talked about the judgments against the Federal Government as a result of the lawsuits because the Federal Government had breached its contract because it didn't have the ability to take possession of the waste, so that is another 12 or \$13 billion. And then the President decides, well, OK, we are going to pull the plug but we will establish a Blue Ribbon Commission, and now you all are asking for 1.3 billion and pay-as-you-go another 5.6 billion over 10 years.

And, you know, maybe I am biased but when I go to the Rotary Club and I talk about this kind of waste, it is really upsetting to people when you talk about a \$16 trillion Federal debt that is growing every day and this judgment is growing every day. And so you really do wonder what is the President thinking about? We have a Federal law that has not been invalidated. The only reason we are now waiting for a decision of the courts is because the ad-

ministration didn't act, so a lawsuit was filed. And so here we are. And I mean I have great admiration for you and your intellectual ability and your understanding of the issue, but I tell you, I think that Barack Obama is flat wrong on this issue and that the American people are going to suffer.

Now, maybe that is my opening statement and I would be happy to give you an opportunity to respond if you want to. I am certainly not frustrated in any way but if you would like to respond, fine. If you—

Mr. MONIZ. Well, again, it would just be repetitive that Secretary Chu felt that the project would be unworkable and that is again based on the issue of public acceptance, which we consider to be equally important as the scientific criteria. So, again, as I said earlier, when the judgment is made in the litigation with the NRC, I think we will have a path forward there, whichever it is. But, again, I think I have come here today especially to try to, you know, present my perspective. It is the one of the Blue Ribbon Commission that we need to pursue these two tracks in any event. It will be our fastest approach to move fuel, to accept fuel, and we believe that is needed no matter what the repository pathway is. And I hope that we can work together to move the ball.

Mr. WHITFIELD. And I would just say that, I mean, the President is out there every day talking about all-of-the-above, and the nuclear energy is really being stagnant right now because of this waste issue. And if he is genuinely concerned about carbon emission, he should get off the dime and take some action to expedite this waste issue, taking care of this waste issue or we are going to have a pretty stagnant nuclear energy in the U.S., in my view.

Mr. MONIZ. If I may respond to that, I think the administration's actions are very consistent on nuclear power with the all-of-the-above strategy. The fact is after many years of talk, this administration moved out with the conditional \$8 billion loan guarantee for first-mover nuclear plant construction in Georgia, AP 1000s. This administration launched the program and already decided on one license for a new small modular reactor to be constructed, and the administration feels that it is putting forward in fact the proposal for the most effective way to address waste management in a consent-based approach. So I think the ground truth, the ground facts speak for themselves.

Mr. WHITFIELD. Well, Mr. Secretary, I may make one final comment. Every day the President, when he talks about energy, he talks about all-of-the-above and yet America is the only country in the world where you cannot build a new coal-power plant. So I don't see how he can say all-of-the-above.

Mr. MONIZ. Well, I would like to respond to that as well in a similar vein. I think, first of all, of course, the President has stated and I have stated and thousands and thousands of scientists have stated that it would be imprudent not to start addressing the greenhouse gas emission issue. So that is kind of a given in the administration's position. Now, given that, what does all-of-the-above mean? What it means in this case is—and I am going to go back and say there was a lot of talking the talk for many years. This administration put \$6 billion on the table for clean coal projects, eight major sequestration projects, one has started, two will start

next year, five are in construction. ARPA-E has invested in more than 20 projects for novel capture technologies. So if we are going to establish carbon capture utilization—and I might add six of those eight projects have enhanced oil recovery as part of it. If we are going to establish the competitiveness of all of our resources in a low-carbon world, this is exactly what we need to do and the President moved out on these programs.

Mr. WHITFIELD. Well, if I may make one final comment, I do hope that you ought to consider things other than just carbon capture and sequestration because there are a lot of other technologies out there that can be just as beneficial.

Mr. MONIZ. Well, in fact, if I may add—I am sorry, Mr. Chairman, one last thing—

Mr. SHIMKUS. You have been very kind on all this time we have given, so of course you can continue.

Mr. MONIZ. So another example of this case was a week after the President's climate plan announcement in Georgetown, our department put out a draft solicitation for an \$8 billion loan guarantee program for advanced fossil technologies across the board. We are waiting for input in September but we said, as examples, it could be dry fracking. It could be new carbon utilization technologies. It could be advanced fossil combined heat and power. So we are putting out the programs to establish fossil fuels as part of the low-carbon future.

Mr. SHIMKUS. And reclaiming my time. And I want to thank the Secretary for your time. And it was good for some of my nuclear friends to hear some fossil fuel stuff, so that is why I definitely am all-of-the-above in my Congressional District, so it was probably good for them to hear some of that.

In conclusion, again, I would like to thank you. You spent a wonderful amount of time in a subcommittee setting, which it is fairly unique in this process. I want to thank my Members on both sides who participated in today's hearing, and I want to remind Members that they have 10 business days to submit questions for the record, and I ask you, Mr. Secretary, to respond to those as promptly as you can.

Mr. MONIZ. Yes.

Mr. SHIMKUS. And with that, the hearing is now adjourned.

Mr. MONIZ. Thank you, Mr. Chairman. Thank you, Mr. Tonko. [Whereupon, at 4:14 p.m., the subcommittee was adjourned.] [Material submitted for inclusion in the record follows:]

FRED UPTON, MICHIGAN
CHAIRMAN

HENRY A. WAXMAN, CALIFORNIA
RANKING MEMBER

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August 22, 2013

The Honorable Ernest J. Moniz
Secretary
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20460

Dear Secretary Moniz:

Thank you for appearing before the Subcommittee on Environment and the Economy on Wednesday, July 31, 2013, to testify at the hearing entitled "Oversight of DOE's Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste."

Pursuant to the Rules of the Committee on Energy and Commerce, the hearing record remains open for ten business days to permit Members to submit additional questions for the record, which are attached. The format of your responses to these questions should be as follows: (1) the name of the Member whose question you are addressing, (2) the complete text of the question you are addressing in bold, and (3) your answer to that question in plain text.

To facilitate the printing of the hearing record, please respond to these questions by the close of business on Thursday, September 5, 2013. Your responses should be e-mailed to the Legislative Clerk in Word format at Nick.Abraham@mail.house.gov and mailed to Nick Abraham, Legislative Clerk, Committee on Energy and Commerce, 2125 Rayburn House Office Building, Washington, D.C. 20515.

Thank you again for your time and effort preparing and delivering testimony before the Subcommittee.

Sincerely,



John Shimkus
Chairman
Subcommittee on Environment and the Economy

cc: The Honorable Paul Tonko, Ranking Member,
Subcommittee on Environment and the Economy

Attachment



Department of Energy
Washington, DC 20585

March 27, 2014

The Honorable John Shimkus
Chairman
Subcommittee on Environment and the Economy
Committee on Energy and Commerce
U. S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

On July 31, 2013, Secretary Ernest Moniz testified regarding "Oversight of DOE's Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste."

Enclosed are the answers to 25 questions that were submitted by Representatives Bilirakis, Dingell, and you to complete the hearing record.

If we can be of further assistance, please have your staff contact our Congressional Hearing Coordinator, Lillian Owen, at (202) 586-2031.

Sincerely,

A handwritten signature in black ink, reading "Christopher E. Davis".

Christopher E. Davis
Principal Deputy Assistant Secretary
for Congressional Affairs
Congressional and Intergovernmental Affairs

Enclosures

cc: The Honorable Paul Tonko, Ranking Member



Printed with soy ink on recycled paper

The Honorable John Shimkus

- Q1. In your response to my June 28th letter, you attached a table that listed the laws under which you believe each used fuel activity is justified. Some were listed as authorized under the NWPA and others under the Atomic Energy Act of 1954 (AEA). It is clear that, in the NWPA amendments enacted in 1987, Congress directed DOE *not* to conduct further repository research on sites other than Yucca Mountain.

In its decision on *United States v. Estate of Romani*, the U.S. Supreme Court stated:

“...a specific policy embodied in a later statute should control our construction of the [earlier] statute, even though it ha[s] not been expressly amended.”

- a. Please explain why DOE believes it has the authority to follow some sections of the NWPA and ignore others.

A1a. DOE does not believe that it has the authority to follow some sections of the NWPA and ignore others. None of the activities listed in the response to your June 28th letter (the “July 22nd Response”) involve site-specific research on potential repository sites and, therefore, none are prohibited by section 160(a) of the NWPA.

- b. Please explain how DOE’s reliance on the AEA is consistent with the Supreme Court’s decision in *United States v. Estate of Romani*.

A1b: The NWPA does not repeal DOE’s authority under the AEA to conduct research and development related to the disposal of used fuel and high-level radioactive waste. Rather, the NWPA creates a framework that limits the extent to and manner in which DOE can exercise this authority in certain situations. For example, section 160(a) prohibits DOE from conducting site-specific activities, including research and development, at a repository site other than Yucca Mountain. But there is no provision in the NWPA that prohibits DOE from conducting generic activities, including research and development that would

relate to different media rather than specific sites. Therefore, reliance on the AEA as a source of authority is not inconsistent with the Supreme Court decision in Romani or contrary to the framework established by the NWPAA.

Q2. In your response to my June 28, 2013 letter you provided a table citing the Nuclear Waste Policy Act (NWPA) as providing the authority for DOE's interim storage activities. However, DOE's 2008 "Report to Congress on the Demonstration of the Interim Storage of Spent Nuclear Fuel from Decommissioned Nuclear Power Reactor Sites" states that:

"...Section 141 of the NWPA... authorized the Department to site, construction, and operate a monitored retrievable storage (MRS) facility but restricted the ability of the Department to pursue this option by linking any activity under this section to milestones tied to progress in the development of the Yucca Mountain repository."

a. Given that DOE has shut down the Yucca Mountain program, please explain how you can justify DOE's interim storage activities as authorized under the NWPA.

A2a: The 2008 Report to Congress on the Demonstration of the Interim Storage of Spent Nuclear Fuel From Decommissioned Nuclear Power Reactor Sites ("2008 Report") correctly notes the linkages in the NWPA between an MRS and a repository at Yucca Mountain. The authority provided by section 142(b)¹ to site, construct, and operate an MRS is subject to the conditions in sections 143 through 149, which include milestones on the development of a repository. The activities identified in the July 22nd Response are preliminary activities that would be useful in considering sites for an MRS in the future. As such, these activities would occur prior to the activities related to an MRS that are linked to repository milestones. All of the activities identified in the July 22nd Response are consistent with the 2008 Report and the framework of the MRS provisions of the NWPA.

¹ The 2008 Report should have referenced section 142(b), not section 141 of the NWPA. Section 142(b) of the NWPA authorizes DOE to site, construct, and operate an MRS facility subject to the restrictions set forth in sections 143-149.

b. Please explain the rationale for revising DOE's interpretation of this authority under the NWPA.

A2b. As explained in A2a above, the activities DOE is currently undertaking are consistent with the interpretation it provided in the 2008 Report. Nothing in the 2008 Report related to DOE's ability to undertake preliminary activities that were not constrained by the repository milestones set forth in the NWPA.

c. Please list the sizes of the facilities DOE is currently evaluating for both the pilot plant and the "larger" facility.

A2c. DOE is considering a capacity of 10,000 metric tons of heavy metal (MTHM) for a pilot facility based on the current and projected number of shutdown reactors between now and 2021. It is anticipated that there will be as much as 7,000 MTHM stored at shutdown reactors by 2021.

The Administration's *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste* (Administration's *Strategy*) also proposes a larger interim storage facility to be available by 2025.

d. Please list the limits on the size of an MRS as stated in the NWPA.

A2d. A Monitored Retrievable Storage facility is limited to 10,000 metric tons of heavy metal (MTHM) until the beginning of operations of the geologic repository, and is limited to 15,000 MTHM thereafter.

Q3. Does DOE need to expend any money to support the NRC's issuance of the complete Safety Evaluation Report?

A3. DOE will evaluate and respond to any requests by the Nuclear Regulatory Commission as the NRC works to complete the Safety Evaluation Report.

Q4. On June 22, 2012, DOE told the Court in *In re Aiken County* that it has approximately \$17 million in unobligated nuclear waste disposal carryover funds, as well as approximately \$8 million in obligated carryover funds, that it could use for the Yucca Mountain licensing proceeding, if the proceeding were ordered resumed. Is that money still available? If not, please detail the purposes for which it was expended.

A4. The remaining resources available to the Department from Fiscal Year 2010

appropriations as of July 30, 2013 are listed in the table below:

Prior Year Funds

	Unobligated	Obligated Uncosted	Total
Defense Nuclear Waste Disposal	\$ 8,590,655	\$ 14,229,473	\$ 22,820,128
Nuclear Waste Disposal	\$ 7,149,301	\$ 15,547,411	\$ 22,696,712
Total, Prior Year	\$ 15,739,956	\$ 29,776,884	\$ 45,516,840

The differences in available funding since June 2012 are due to ongoing expenses include

pension payments for retired workers, records retention and maintenance, property

security and oversight, and remaining relocation expenses for reassigned workers.

Q5. In a previous hearing before this Committee, I asked if you were aware of any scientific or technical issues that would prevent Yucca Mountain from being a safe repository. You responded by saying, "This is an NRC decision ultimately to be taken." Do you believe the people of the United States deserve to know what the NRC concluded in its Safety Evaluation Report? If not, please explain how your response conforms to President Obama's memorandums on *Transparency and Open Government*, and *Scientific Integrity*.

A5. As previously stated during the hearing, this is an issue for the Nuclear Regulatory Commission to decide.

Q6. Is there any currently applicable appropriations legislation that specifically prohibits DOE from using general funds for purposes of supporting the license review or proceeding?

- A6. DOE is unaware of any currently applicable appropriations legislation that expressly prohibits DOE from using general funds for purposes of supporting the license review or proceeding. However, Congress' decision to appropriate no monies from the Nuclear Waste Fund for Yucca Mountain licensing activities is a specific denial of funding – an appropriation of zero for such activities. In light of Congress' history of funding the Yucca Mountain license proceeding through specific appropriations from the Nuclear Waste Fund, it is evident that zeroing out appropriations to DOE from the Fund in FY 2011, FY 2012, and FY 2013 was no oversight.
- Q7. You indicated in the hearing that DOE staff has met with entities who might be interested in hosting facilities. Please explain the authority under which DOE has engaged in these consent-based activities. Please provide a list of all states, counties, local governments, economic development agencies, or any other organizations that DOE staff has met with to discuss their interest in hosting used fuel facilities.
- A7. Various parties have approached the Department to express their views regarding nuclear waste activities and policies. Some of these parties have expressed a potential interest in hosting a nuclear facility in the future as part of a consent-based siting process. As part of conducting the business of the Federal government, the Department conducts meetings with interested parties, including state and local government representatives, private sector companies, and non-profit entities. The Department has not directly solicited input on this matter, but welcomes the expressions of interest and viewpoints as it considers how to proceed in implementing the Administration's *Strategy*.

Furthermore, as discussed above, the NWPA does not prohibit preliminary activities related to the siting of an MRS such as discussions with representatives of sites that might have an interest in hosting such a facility. The authorities for specific preliminary

activities were identified in the Enclosure to the July 22nd Response under the “Legal Authority” column.

- Q8. DOE has refused to meet with representatives from Nye County, Nevada, in spite of their formal statement notifying DOE of their consent to host a repository. Please explain how DOE's authority to meet with the entities listed in response to the previous question would not also empower DOE to meet with Nye County representatives.
- A8. Department staff have spoken with representatives from Nye County on numerous occasions at conferences and stakeholder meetings regarding their interest in hosting a repository or interim storage facility and how they might participate in whatever process eventually emerges to site those facilities. As noted in the answer to Question 7, the Department conducts meetings with interested parties, including state and local government representatives, private sector companies, and non-profit entities as part of its normal course of business. If there is a request from representatives from Nye County, Nevada, to meet, we will certainly honor that request.
- Q9. The NWPA authorized the Office of Nuclear Waste Negotiator to pursue consent-based siting. Please describe how your vision of consent-based siting differs from DOE's practical experience and why it would be more likely to yield a positive result, i.e. a repository site.
- A9. While established in the Nuclear Waste Policy Amendments Act of 1987, the first head of the Office of the Nuclear Waste Negotiator was not confirmed by the Senate until 1990. The Nuclear Waste Policy Act included a sunset date for the Office of Nuclear Waste Negotiator, so authorization and funding for the office expired in late 1994. The short history of this office did not engender confidence on the part of either the nuclear industry or participants in the siting process in the early 1990s.

Any workable solution for meeting our obligation to dispose of used fuel and high-level radioactive waste will need to be both technically sound and have the support of the affected state and communities. Our experience has shown that a site cannot be imposed without public acceptance, as was unsuccessfully attempted with Yucca Mountain. That is why the Blue Ribbon Commission (BRC) report and the Administration's *Strategy* focus on a consent-based siting process.

- Q10. Please describe in detail the results of the consent-based siting process in Great Britain. Please also describe in detail your basis for concluding that a consent-based process would yield a positive result in the U.S.
- A10. Staff from the United Kingdom's Nuclear Decommissioning Authority would be the best sources of detailed information on their siting process. However, it is understood that the UK has yet to find a volunteer community for a geologic disposal facility.

Whatever circumstances may be in the UK, other countries have successfully selected sites for nuclear waste facilities, notably Sweden and Finland. Further, Canada and France both have programs underway to engage multiple levels of governments on siting that appear very encouraging.

With regard to the United States, a top-down approach to executing a national nuclear waste management program has not been successful to date. Any workable solution for meeting our obligation to dispose of used fuel and high-level radioactive waste will need to be both technically sound and have the support of the affected state and communities. Our experience has shown that a site cannot be imposed without public acceptance. That

is why the BRC report and the Administration's *Strategy* focus on a consent-based siting process.

Q11. The Waste Isolation Pilot Project in New Mexico is often cited as a successful example of consent-based siting. Please provide a comprehensive list of all administrative actions, citizen suits, injunction requests or other legal challenges to the development or opening of the facility including those initiated by the State of New Mexico, environmental stakeholders, or other plaintiffs or petitioners. The list should a description of the action, the date the action was commenced, the date it was resolved or concluded, and the outcome.

A11. The Waste Isolation Pilot Plant (WIPP) represents the United States' only mined geologic repository for the permanent disposal of defense-generated transuranic waste. Below is a list of administrative actions, citizen suits, injunction requests, and other legal challenges that involved WIPP prior to its operation.

Summary of Administrative and Legal Actions Involving WIPP Prior to Operation

DATE	TYPE OF ACTION	INITIATED BY	DISCUSSION
1974	Administrative	Atomic Energy Commission	A location 30 miles east of Carlsbad is chosen.
1975	Administrative	Governor of New Mexico	New Mexico Governor Apodaca establishes a Governor's Advisory Committee on WIPP.
1976	Administrative	Energy Research and Development Administration	Energy Research and Development Administration (ERDA) files an application with the U.S. Interior Department's Bureau of Land Management (BLM) for the withdrawal of 17,200 acres of land in Eddy County for the WIPP Project. [Federal Register, Vol. 41, No. 243, p. 54994, December 16, 1976]
1978	Administrative	Department of Energy	On October 13, the U.S. Department of Energy (DOE) files an application with the BLM to continue the segregation of 17,200 acres of land in Eddy County, New Mexico, for the WIPP Project. [Federal Register, Vol. 43, No. 221, p. 53063, November 15, 1978]
1978	Administrative	Department of Energy	The Department of Energy funds the formation of the Environmental Evaluation Group (EEG) is established to provide a full-time, independent technical assessment of the WIPP Project. [Cooperative Agreement No. DE-AC04-79AL10752]
1979	Legislative	New Mexico Legislature	The New Mexico State Legislature establishes the interim legislative Radioactive and Hazardous Materials

DATE	TYPE OF ACTION	INITIATED BY	DISCUSSION
			Committee and the Radioactive Waste Consultation Task Force. [Laws of 1979, Chapter 380; Section 74-4A-2 New Mexico Statutes Annotated 1978]
1979	Regulatory	Department of Energy	The DOE issues its Draft Environmental Impact Statement (DEIS) on WIPP.
1979	Legislative	New Mexico Legislature	The U.S. Congress approves the Department of Energy National Security and Military Applications of Nuclear Energy Authorization Act of 1980 (Public Law 96-164). Section 213(a) of the Act authorizes WIPP and mandates a written consultation and cooperation agreement with the State of New Mexico by September 30, 1980.
1980	Administrative	Department of Energy and State of New Mexico	Negotiations on a consultation and cooperation agreement are conducted.
1980	Regulatory	Department of Energy	The DOE issues its Final Environmental Impact Statement (FEIS) on WIPP. [U.S. Department of Energy, Final Environmental Impact Statement, Waste Isolation Pilot Plant, DOE/EIS-0026, October 1980]
1980	Administrative	Department of Energy	The DOE files an application with the BLM for the withdrawal of 8,960 acres of federal land for the purpose of conducting a Site and Preliminary Design Validation (SPDV) program at the WIPP. [Federal Register, Vol. 45, No. 196, p. 75768, November 17, 1980]
1981	Regulatory	Department of Energy	The DOE issues its Record of Decision to proceed with WIPP construction. [Federal Register, Vol. 46, No. 18, p. 9162, January 28, 1981]
1981	Legal	State of New Mexico	New Mexico Attorney General Bingaman files suit in U.S. District Court (Albuquerque) against the DOE and the Interior Department, alleging violations of federal and State law in connection with the continuing development of WIPP. [Civil Action No. 81-0363 JB]
1981	Legal	U. S. District Court	U.S. District Judge Juan G. Burciaga issues a federal court Order, which provides New Mexico a meaningful role in the decision-making process for the WIPP Project. The Order stays all proceedings in the State lawsuit in accordance with a Stipulated Agreement which requires the DOE perform additional geotechnical studies at the WIPP site and then provide the results to the State for review. It also requires DOE and the State to reach a negotiated settlement on certain State "off-site concerns" (e.g., emergency response, highway upgrading, transportation monitoring, and accident liability).
1981	Administrative	Department of Energy and State of New Mexico	The Consultation and Cooperation Agreement is signed by Governor Bruce King and DOE Secretary James Edwards.
1982	Administrative	Department of	The BLM issues Public Land Order 6232, withdrawing

DATE	TYPE OF ACTION	INITIATED BY	DISCUSSION
		Interior	8,960 acres of federal land (and 1,280 acres of State trust land, if acquired by the federal government) for the purpose of conducting the SPDV program at WIPP. [Federal Register, Vol. 47, No. 61, p. 13340, March 30, 1982]
1982	Administrative	Department of Energy and State of New Mexico	The DOE and New Mexico enter into the Supplemental Stipulated Agreement Resolving Certain State Off-site Concerns over WIPP.
1983	Administrative	Department of Energy	The DOE files an application with the BLM for the withdrawal of 8,960 of federal land (and 1,280 acres of State land, if acquired by the federal government) for the purpose of constructing WIPP. [Federal Register, Vol. 48, No. 19, p. 3878, January 27, 1983]
1983	Administrative	Department of Interior	The BLM issues Public Land Order 6403, withdrawing 8,960 acres of federal land (and 1,280 acres of State trust land, if acquired by the federal government) for the construction of full facilities at the WIPP site. [Federal Register, Vol. 48, No. 130, p. 31038, July 6, 1983]
1983	Administrative	Department of Energy	The DOE announces its decision to proceed with full facility construction of the WIPP. [Federal Register, Vol. 48, No. 128, p. 30427, July 1, 1983]
1984	Administrative	Department of Energy and State of New Mexico	New Mexico and the DOE execute the "First Modification to the 1981 Consultation and Cooperation Agreement."
1984	Regulatory	Environmental Protection Agency	In September, the U.S. Environmental Protection Agency (EPA) promulgates its "Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes." [Federal Register, Vol. 50, No. 182, p. 38066, September 19, 1985]
1986	Regulatory	Environmental Protection Agency	In July, the EPA clarifies that the hazardous constituents of radioactive mixed wastes are subject to regulation under Subtitle C of the Resource Conservation and Recovery Act of 1976 (RCRA). [Federal Register, Vol. 51, No. 128, p. 24504, July 3, 1986]
1987	Administrative	Department of Energy	In early May, the DOE confirms and further clarifies EPA's July 3, 1986, interpretive notice, stating "...all DOE radioactive waste which is hazardous under RCRA will be subject to regulation under both RCRA and the AEA (Atomic Energy Act of 1954)." [Federal Register, Vol. 52, No. 84, p. 15937, May 1, 1987]
1987	Legal	U. S. Court of Appeals	The U.S. Court of Appeals for the First District (Boston) vacates and remands to the EPA for reconsideration Subpart B of its "Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level, and Transuranic Radioactive Waste," 40 CFR Part 191.

DATE	TYPE OF ACTION	INITIATED BY	DISCUSSION
1987	Administrative	Department of Energy and State of New Mexico	New Mexico and the DOE execute the "Second Modification to the Consultation and Cooperation Agreement."
1987	Administrative	Department of Energy and State of New Mexico	A separate agreement, which amends the 1982 Supplemental Stipulated Agreement and relates to funding for WIPP by-passes and relief routes in New Mexico, is also executed by New Mexico and the DOE.
1988	Administrative	Department of Interior	The BLM issues to the State of New Mexico a land exchange conveyance document. The document conveys to New Mexico 2,519.43 acres of federal land in Eddy County (both surface and mineral estate) in exchange for 1,280 acres of State trust lands (both surface and mineral estate) located within the WIPP withdrawal area. [Federal Register, Vol. 53, No. 115, p. 22391, June 15, 1988]
1988	Administrative	Department of Energy and State of New Mexico	The DOE and New Mexico execute a Cooperative Agreement, No. DE-FC04-88AL53813, entitled "WIPP Enhancement of the State of New Mexico's Emergency Response Capability."
1988	Legislative	Congress	The National Defense Authorization Act for Fiscal Year 1989 (Public Law 100-456) was signed into law. Section 1433 of the Act assigns the Environmental Evaluation Group (EEG) to the New Mexico Institute of Mining and Technology and provides for continued funding from DOE through Cooperative Agreement No. DE-AC04-89AL58309.
1989	Administrative	Department of Energy	The DOE files an application with BLM for the withdrawal of 10,240 acres of federal land. The application is noticed in the Federal Register of April 19, 1989.
1989	Regulatory	Department of Energy	The DOE submits to the U.S. Environmental Protection Agency (EPA) a "No-Migration Variance Petition."
1989	Regulatory	Department of Energy	The DOE issues its Draft Supplement Environmental Impact Statement (DSEIS) on WIPP. [Federal Register, Vol. 54, No. 76, p. 16350, April 21, 1989]
1989	Regulatory	Nuclear Regulatory Commission	On August 29, the U.S. Nuclear Regulatory Commission (NRC) issues a "Certificate of Compliance" for the TRUPACT-II.
1990	Regulatory	Department of Energy	In late January, the DOE issues its Final Supplement Environmental Impact Statement (FSEIS) on WIPP. [U.S. Department of Energy, Final Supplement Environmental Impact Statement, Waste Isolation Pilot Plant, DOE/EIS-0026-FS, January 1990]
1990	Regulatory	Department of Energy	The DOE announces Secretary Watkins' approval of a "Record of Decision" (ROD) on the WIPP Final Supplement Environmental Impact Statement. [Federal Register, Vol. 55, No. 121, p. 25689, June 22, 1990]
1990	Regulatory	Environmental Protection	The New Mexico Environment Department (NMED) is authorized by EPA to regulate radioactive mixed wastes in

DATE	TYPE OF ACTION	INITIATED BY	DISCUSSION
		Agency	New Mexico in accordance with its approved program. [Federal Register, Vol. 55, No. 133, p. 28397, July 11, 1990]
1990	Regulatory	Environmental Protection Agency	The EPA issues a conditional no-migration determination for the WIPP facility. [Federal Register, p. 47700, November 14, 1990]
1991	Administrative	Department of Interior	The U.S. Interior Department issues Public Land Order No. 6826, which modifies an earlier WIPP administrative land withdrawal order (Public Land Order No. 6403) [Federal Register, Vol. 56, No. 18, p. 3038, January 28, 1991; and Vol. 56, No. 29, p. 5731, February 12, 1991]
1991	Administrative	New Mexico Highway Commission	The N.M. State Highway Commission designates new WIPP routes in New Mexico after a comprehensive comparative analysis of alternative routes and a series of public hearings.
1991	Administrative	Department of Energy	Secretary Watkins notifies U.S. Interior Secretary Manuel Lujan, Jr., that WIPP is ready to begin the Test Phase. Similarly, the State of New Mexico is notified that the first shipment of waste may reach the WIPP site by October 10. [Federal Register, Vol. 56, No. 196, p. 50923, October 9, 1991]
1991	Legal	New Mexico Attorney General	New Mexico Attorney General Tom Udall files a lawsuit in U.S. District Court for the District of Columbia against DOE and the U.S. Department of the Interior to stop the threatened shipment of wastes to WIPP under the administrative withdrawal. [Civil Action No. 91-2527]
1991	Legal	Environmental Groups	Four environmental groups file a lawsuit in U.S. District Court for the District of Columbia. [Civil Action No. 91-2929]
1991	Injunction	U.S. District Court	U.S. District Court Judge John Garrett Penn issues an Order, along with a corresponding explanatory memorandum, granting the State's motion for a preliminary injunction. [Civil Action 91-2527]
1992	Injunction	U.S. District Court	Judge Penn issues an Order that imposes a permanent injunction prohibiting the transport or disposal of any transuranic (TRU) waste at WIPP; it also grants two separate motions for summary judgment in the consolidated WIPP lawsuits.
1992	Legal	State of New Mexico	In the first of the consolidated suits, State of New Mexico v. Watkins (Civil Action No. 91-2527), Judge Penn granted the plaintiff-intervener's motion for summary judgment.
1992	Legal	Environmental Defense Fund	In Environmental Defense Fund v. Watkins (Civil Action No. 91-2929) Judge Penn granted EDF's motion for summary judgment
1992	Legal	Department of Energy	The DOE appeals Judge Penn's ruling of January 31, 1992.

DATE	TYPE OF ACTION	INITIATED BY	DISCUSSION
1992	Legal	Appeals Court	The U.S. Court of Appeals for the D.C. Circuit reversed the earlier ruling that WIPP was not eligible for interim status under RCRA and upheld the District Court's decision that Interior Secretary Lujan exceeded his authority under Federal Land Policy Management Act in approving WIPP Public Land Order 6826, issued January 22, 1991. [Civil Action Nos. 91-5387 and 92-5044]
1992	Legal	New Mexico Supreme Court	The New Mexico Supreme Court determined that the diminution in value of the remainder of landowners' property due to public fear from the use of part of it to construct bypass for transportation of nuclear waste, whether the fear was well-founded or not, was compensable in condemnation proceeding. [Santa Fe v. Komis, No. 20325, SUPREME COURT OF NEW MEXICO, 114 N.M. 659; 845 P.2d 753; 1992 N.M. LEXIS 246; 31 N.M. St. B. Bull. 945, August 26, 1992, Decided, August 26, 1992, Filed, As Corrected.]
1992	Legislative	U. S. Congress	The WIPP Land Withdrawal Act (Public Law 102-579) was signed into law.
1993	Regulatory	Environmental Protection Agency	The EPA issues a Final Rule that amends its regulations codified at 40 CFR Part 191. [Federal Register, Vol. 58, No. 242, p. 66398, December 20, 1993]
1995	Regulatory	Department of Energy	The DOE submits the Resource Conservation and Recovery Act (RCRA) Part B permit application [DOE/WIPP 91-005, Rev. 6] to the New Mexico Environment Department (NMED).
1996	Regulatory	Environmental Protection Agency	The EPA issues a Final Rule establishing criteria for use in certifying whether WIPP complies with the applicable disposal standards set forth in 40 CFR Part 191. [Federal Register, Vol. 61, No. 28, p. 5224, February 9, 1996]
1996	Legal	New Mexico Attorney General, Environmental Groups	The New Mexico Attorney General files a petition in the U.S. Court of Appeals for the D.C. Circuit for review of EPA's final WIPP Compliance Criteria, 40 CFR Part 194. [Civil Action No. 96-1107] This petition is ultimately consolidated with two other similar petitions filed by: two environmental groups and two individuals [Civil Action No. 96-1108]; and the Texas Attorney General [Civil Action No. 96-1109].
1996	Regulatory	Department of Energy	The DOE submits a final No-Migration Variance Petition to the EPA.
1996	Legislative	U. S. Congress	The National Defense Authorization Act for Fiscal Year 1997 (Public Law 104-201) was signed into law and amended the 1992 WIPP Land Withdrawal Act.
1997	Legal	U.S. Court of Appeals	The U.S. Court of Appeals for the D.C. Circuit denies petitions for review filed by the New Mexico Attorney General and others of EPA's final WIPP Compliance Criteria.

DATE	TYPE OF ACTION	INITIATED BY	DISCUSSION
1997	Regulatory	Department of Energy	The DOE issues its WIPP Disposal Phase Final Supplemental Environmental Impact Statement (DOE/EIS-0026-FS2, September 1997).
1998	Regulatory	Department of Energy	The DOE issues a "Record of Decision" (ROD) to dispose of TRU waste at WIPP. [Federal Register, Vol. 63, No. 15, p. 3624, January 23, 1998]
1998	Regulatory	Environmental Protection Agency	The EPA announces it is certifying that WIPP will comply with the applicable disposal regulations set forth at Subparts B and C of 40 CFR Part 191. [Federal Register, Vol. 63, No. 95, p. 27354, May 18, 1998] Immediately following the EPA announcement, DOE Secretary Federico Pena notifies Congress that WIPP is ready to begin disposal operations. Also on this same date, DOE petitions the U.S. District Court for the District of Columbia to lift its 1992 permanent injunction barring the transport or introduction of any TRU waste at WIPP. Subsequently, oral arguments in the case are scheduled for March 12, 1999.
1998	Administrative	Department of Energy	The DOE Secretary Federico Pena notifies Congress that WIPP is ready to begin disposal operations. Also on this same date, DOE petitions the U.S. District Court for the District of Columbia to lift its 1992 permanent injunction barring the transport or introduction of any TRU waste at WIPP. Subsequently, oral arguments in the case are scheduled for March 12, 1999.
1998	Legal	Department of Energy	The DOE petitions the U.S. District Court for the District of Columbia to lift its 1992 permanent injunction barring the transport or introduction of any TRU waste at WIPP.
1998	Legal	New Mexico Attorney General, Environmental Groups	On July 17, 1998, the New Mexico Attorney General and three environmental groups filed petitions against EPA and Administrator Browner in the U.S. Court of Appeals for the D.C. Circuit, alleging violations of notice and comment rulemaking and substantive technical errors in EPA's certification of WIPP. [Civil Action Nos. 98-1322, -1323, -1324]. Subsequently, on May 5, 1999, the Court granted New Mexico's motion for voluntary dismissal and cancelled oral arguments scheduled for the next day. The Court issued an order on June 28, 1999, denying the remaining petitioners' challenges.
1999	Legal	District Court	Judge Penn denies request for injunction and confirms WIPP Interim Status under RCRA.
1999	Operational	Department of Energy	First shipment arrives from Los Alamos National Laboratory
1999	Regulatory	New Mexico Environment Department	New Mexico issues Hazardous Waste Facility Permit
2000	Operational	Department of Energy	First mixed waste shipment arrives from Rocky flats

Q12. Is DOE using taxpayer money to fund public opinion polling in any of these potential host states or communities? Are public preference studies different from public opinion polling? If so, please explain.

A12. DOE appropriated funds are used to understand technical issues related to public preference studies, which, as explained below, are different from public opinion polling.

The difference between public opinion polling and public preference studies is that the latter seeks to measure more than opinions. Public preference studies seek to understand what people know about the nuclear fuel cycle, what they are concerned about and why they have the preferences they do about nuclear facility siting.

Q13. How long will it take DOE to establish "generic" safety standards for a repository other than Yucca Mountain?

A13. Under the Nuclear Waste Policy Act, the Department of Energy is not responsible for establishing either generic or specific safety standards for repositories. Rather NRC is responsible for establishing safety standards for repositories and the Environmental Protection Agency (EPA) is responsible for establishing radiation protection standards for the general public that are implemented by the Nuclear Regulatory Commission. The President's Fiscal Year 2014 Budget requests funds for EPA to begin the process of updating the existing regulations.

Q14. Please explain whether you believe that the science done by our national labs in support of the Yucca Mountain license application is sound. Is it possible that a viable safety case for the Yucca Mountain repository was made in the DOE license application? If not, please explain.

A14. In moving to withdraw its Yucca Mountain license application, the Department has not disavowed the technical content set forth in the application. To the contrary, the

Department believes that the license application was complete and accurate in all material respects. Rather, as the Department has made clear, after many years of experience and significant expenditure of funds, Yucca Mountain has not proved a workable option. The Department believes that we can and must do better, and believes that the appropriate basis upon which to do so is a consent-based siting process, as described in the *Administration Strategy*.

- Q15. How long would it take to transfer 70,000 metric tons of spent nuclear fuel from a "larger" interim storage facility to a repository?
- A15. The time it would take to transfer 70,000 metric tons of used nuclear fuel from an interim storage facility to a geologic repository would depend on a number of factors, including the rate that the repository would accept the fuel. DOE has previously considered acceptance rates of 3,000 metric tons per year. Additional factors would include the mode of transportation and the proximity of the storage facility to the repository.
- Q16. Please describe why you believe DOE has the authority to use Nuclear Waste Fund money to fund 180c transportation activities for destinations other than Yucca Mountain.
- A16. Section 180(c) of the NWPAA requires that the Secretary provide technical assistance and funds to States and Indian Tribes for training of public safety officials through whose jurisdictions the Secretary plans to transport spent nuclear fuel or high-level radioactive waste under subtitle A or subtitle C of the NWPAA. The Department is not providing Nuclear Waste Fund money to States and Tribes for technical assistance or training of public safety officials under 180(c). DOE's activities under 180(c) relate to developing the process and procedures by which technical assistance and funds would be provided to

States and Tribes under 180(c) when the Secretary develops plans for specific transportation activities under the NWP.

- Q17. Given that DOE has resumed the study of granite formations, have you formally considered certain factors as listed in Section 161(d) of the Nuclear Waste Policy Act? Please provide a list of the states where granite formations are located that might be favorable for repository development and whether each state is impacted by the disqualifying factors listed in Section 161(d).
- A17. Although DOE is doing research and development on generic granitic bodies, those studies have not progressed to the point of including the factors listed in Section 161(d) of the Nuclear Waste Policy Act. Consideration of those factors would occur in the future as part of any site-specific studies of granite formations.

As recently as 2008, in "Report to the President and the Congress by the Secretary Of Energy on the Need for a Second Repository", granitic bodies believed to be adequate or that could be adequate for investigation for siting a second repository were identified in 25 states (Minnesota, Michigan, New Hampshire, Massachusetts, Pennsylvania, New Jersey, Maryland, North Carolina, Georgia, Wisconsin, Maine, Vermont, Connecticut, New York, Delaware, Virginia, South Carolina, Washington, Idaho, Arizona, Wyoming, Texas, Alabama, South Dakota, and Oklahoma).

- Q18. Do you believe deep borehole disposal conforms to the NWP's retrievability requirement? Please provide a list of states that have geologic formations that might be favorable for the development of boreholes.
- A18. Retrievability is likely more complex from deep boreholes than from a mined repository. However, retrievability from deep boreholes is believed to be possible and worthy of further study. Using as a range of depth to crystalline basement of 0 to 2000 meters, every state is potentially suitable for borehole disposal. However, more research and

study is needed on technical considerations, impacts, economics, and other issues related to deep borehole disposal to better understand the viability of this potential option.

Q19. During the hearing you testified that the Administration strongly supports the BRC recommendations. Please explain why the Administration hasn't proposed legislation to implement the recommendations.

A19. The Administration looks forward to working with Congress to develop the legislation necessary to move the country forward on this issue. In its *Strategy*, the Administration has highlighted agreement with many of the principles of the BRC recommendations and has outlined actions that, with legislative authorization by Congress, can lead to a safe and responsible solution to managing the nation's nuclear waste. Action by Congress is necessary for success of the waste management mission.

Q20. Section 302(a)(5)(B) of the NWP states: "in return for payment of fees established in this section, the Secretary, beginning not later than January 31, 1998, will dispose of the high-level radioactive waste or spent nuclear fuel..."

Section 302(a)(6) continues: "The Secretary shall establish in writing criteria setting forth the terms and conditions under which disposal services shall be made available."

During the hearing you stated that: "Again, the one mil per kilowatt hour is not buy a facility. It's to buy a service. The service as far as the utility is concerned is spent fuel removal."

a. While a utility's primary concern may be spent fuel removal, please explain how your redefinition of the serve as spent fuel removal, rather than disposal:

- i. Complies with the NWP; and
- ii. Meets your responsibility as Secretary to protect public health and safety by developing a repository for the permanent disposal of spent nuclear fuel and high-level waste.

A20a. The Secretary's responsibility to protect health and safety will be a central consideration as it moves forward with planning and implementing nuclear waste

disposal. The Secretary's statement at the July 31, 2013, hearing did not redefine or somehow limit the Department's responsibility under the NWA to dispose of contract holders' spent nuclear fuel and high-level waste. In Indiana Michigan v. DOE, the D.C. Circuit explained that the Department is obligated to dispose of spent nuclear fuel, and that obligation is not tied to the commencement of repository operations. The Secretary remains committed to fulfilling that obligation, and his use of the term "remove" was intended to reaffirm this obligation.

Further, the Secretary recognizes that the NWA obligates the Department to enter into Standard Contracts with all entities that "generate[] or hold[] title to high-level radioactive waste, or spent nuclear fuel, of domestic origin for the acceptance of title, subsequent transportation, and disposal of such waste or spent fuel" The Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Waste sets out the terms and conditions for which those disposal services will be made available to contract holders. For example, Article IV.B.1. of the Standard Contract provides that "DOE shall accept title to all SNF and/or HLW of domestic origin, generated by the civilian nuclear power reactor(s)[,] . . . provide subsequent transportation for such material to the DOE facility, and dispose of such material in accordance with the terms of this contract." Moreover, the Department remains committed to its obligation to accept, manage, and ultimately dispose of spent nuclear fuel and high-level radioactive waste.

- b. Given how this redefinition of the service as spent fuel removal de-emphasizes permanent disposal, please describe why such a redefinition will not further increase

communities concerns that any interim storage site will become a de facto permanent repository.

A20b. As explained above, the Secretary has not redefined the Department's obligation to dispose of high-level radioactive waste and spent nuclear fuel. Nor has this obligation been deemphasized. As outlined in the Administration's *Strategy*, siting and licensing a permanent geologic repository, using a consent-based siting approach, is a key component of the Department's strategic plan.

Pursuing permanent disposal will also ensure that any interim storage options do not become de facto permanent repositories. Interim storage will allow the Department to achieve important goals such as meeting its obligation to remove contract holders' high-level waste and spent nuclear fuel from shutdown reactors.

c. Will the removal of spent nuclear fuel from an NRC-licensed site to a separate NRC-licensed site provide any increase in the safety or security of the stored spent fuel? If so, please explain.

A20c. Any NRC-licensed site will be safe and secure for storage of spent fuel.

However, there may be other reasons why moving spent fuel in storage at one or more NRC-licensed site(s) to another NRC-licensed site would be advantageous, including, for example, cost and land use considerations.

The Honorable Gus M. Bilirakis

- Q1. Mr. Secretary in your testimony you mentioned the considerable cost of the federal government paying utilities for breaching its contract to dispose of used nuclear fuel. The failure of the federal government to fulfill its legal obligations has resulted in dozens of lawsuits and \$2 billion in payments to utilities so far, with the prospect of tens of billions of dollars of payments in the future. In addition, the Department of Justice has spent more than \$188 million through 2011 to litigate these cases. Considering how scarce taxpayer dollars are now, why doesn't the Department enter into fair and reasonable settlements with the utilities to minimize the ongoing costs of litigation?
- A1. The Attorney General has the authority to resolve disputes in Federal Court. 28 U.S.C. sec. 516. Thus far the Department of Justice has obtained settlements covering approximately 70 percent of the nation's nuclear reactors. We respectfully suggest that any further inquiries regarding the litigation or its potential resolution should be directed to the Department of Justice.

The Honorable John D. Dingell

- Q1. In 2006, you wrote an article expressing support for Yucca Mountain but in 2011 wrote another article saying that there needs to be an alternative to Yucca Mountain. Do you now believe that Yucca Mountain is no longer an option as a permanent repository? Please provide additional information for the record regarding the viability of Yucca Mountain as a permanent repository.
- A1. This Administration has consistently said that Yucca Mountain is not a workable option. Any workable lasting solution for the final disposition of used fuel and nuclear waste must be based not only on sound science but also on achieving public support in the affected communities and states. When this Administration took office, the timeline for opening Yucca Mountain had already been pushed back by two decades, stalled by public protest and legal opposition. It was clear that the stalemate could continue indefinitely.
- Q2. Among the BRC's recommendations is a consent based approach where localities across the country could volunteer to be the site of a new repository. Under the best case scenario, where all units of government, from local to state to federal, agree and there is a site that meets the needs for a repository of this kind, approximately how long and how much do you believe it would cost to go through this process?
- A2. The Administration's *Strategy* is to have a repository sited through a consent based approach, designed, licensed, constructed and operational by 2048. The Department's 2013 fee adequacy assessment estimated that the cost of pre-selection site evaluation for a repository could be approximately \$3.2 billion and that site characterization and licensing could be approximately \$8.5 billion.
- Q3. The BRC report recommends "access to the funds nuclear utility ratepayers are providing for the purpose of nuclear waste management" and you propose non-legislative as well as legislative changes to achieve this goal. Can access to the funds be gained through non-legislative means?

A3. Reclassifying nuclear waste fees is not a simple technical correction, and achieving a sustainable funding scheme for the nation's nuclear waste management is best accomplished through legislation. Administrative reclassification is unworkable and would not provide the stable funding situation that all parties are seeking to address this problem.

Q4. In the 2011 article I referenced earlier, you noted that you are strong supporter of nuclear energy, developing new nuclear technologies, and investing in other energy technologies. Based on recent appropriations and the recently passed Energy and Water Appropriations from the House, do you believe your Department has the resources to invest in these technologies to prevent, as you put it, America being "less competitive in the global technology market?" Would you please provide information for the record on how you intend to keep our country competitive?

A4. Competing in the new energy economy will require us to harness the expertise of our scientists, engineers, and entrepreneurs. As the President said, the "the world is shifting to an innovation economy, and nobody does innovation better than America. In today's innovation economy, we need a world-class commitment to science and research." The President is committed to making investments in research and development (R&D) that will grow our economy and enable America to remain competitive. This focus on science and innovation will help create the industries and jobs of the future and address the challenges and opportunities of the 21st Century.

With regard to nuclear power, the President's FY 2014 budget request invests \$735 million in the nuclear energy program to help develop the next-generation of nuclear power technologies, including small modular reactors and improved light water reactor systems, and to continue R&D efforts in areas such as improved fuel forms.

The Administration recognizes the Government's role in fostering scientific and technological breakthroughs, and has committed significant resources to ensure America leads the world in the innovations of the future. This includes \$5.2 billion for the Office of Science to support basic research that could lead to new discoveries and help solve our energy challenges. These funds support progress in materials science, basic energy science, advanced computing and more. They also provide America's researchers and industries with state-of-the-art tools to ensure they stay at the cutting edge of science.

The FY 2014 budget request continues to support Energy Frontier Research Centers. The Energy Frontier Research Centers are working to solve specific scientific problems to help unleash new clean energy technology development. So far, the EFRCs have generated some 3,400 peer-reviewed papers, 60 invention disclosures, and 200 patents. In addition, the Centers report numerous instances of technology transfer. In their three-plus years of existence, the EFRCs have achieved scientific breakthroughs in multiple areas, from solar power and batteries to new catalysts for refining petroleum and powering fuel cells. In FY 2014, we are going to hold an open re-competition to select new EFRCs and consider renewal applications for existing EFRCs.

The FY 2014 budget request also supports the five existing Energy Innovation Hubs and proposes a new Hub in electricity systems. Through the Hubs, we are bringing together our nation's top scientists and engineers to achieve game-changing energy goals. The Hubs continue to make progress. For example, the Modeling and Simulation for Nuclear

Reactors Hub has released the first versions of software that, support simulating a virtual model of an operating physical reactor. The Fuels from Sunlight Hub has filed multiple invention disclosures and published scientific papers. And the Energy Efficient Buildings Hub is developing advanced building modeling tools and has built one of the country's first 3-D building design labs.

Additionally, the FY 2014 budget request includes \$379 million for the Advanced Research Projects Agency for Energy, known as ARPA-E, to support high-impact energy technology projects with the potential to transform the energy sector. ARPA-E has invested in roughly 285 high-risk, high-reward research projects that, if successful, could create the foundation for entirely new industries. Seventeen of these projects, which received an initial investment from ARPA-E of approximately \$70 million in total, have attracted over \$450 million in private sector follow-on funding. These companies and research teams have produced a battery that doubled the energy density of any previous design, successfully engineered microbes that use carbon dioxide and hydrogen to make fuel for cars, and developed a 1 megawatt silicon carbide transistor the size of a fingernail.

In FY14, ARPA-E will continue to work on a variety of transportation projects, including alternative and bio-derived fuels, batteries, components for transportation electrification, and advanced vehicle designs and materials. Additionally, ARPA-E will continue work on stationary power systems, including building efficiency, stationary energy storage systems, grid modernization, and stationary energy generation.

Taken together, our research initiatives will help power America's great innovation machine to accelerate energy breakthroughs and create jobs.

